



FROM PLAN DATED:
BUILDER: GREENPARK
SITE: LAMBERTS LANE HOME CORP
MODEL: BARTON 8
ELEVATION: 2
LOT: 7
CITY: CARLETON
SALESMAN: MARIO DICIANO
DESIGNER: AJ
REVISION: lbv

NOTES:
REFER TO THE **NORDIC INSTALLATION** GUIDE FOR PROPER STORAGE AND INSTALLATION.
SQUASH BLOCKS OF 2x4, 2x6, 2x8 #2 S.P.F REQ'D UNDER INTERIOR UNIFORM LOAD BEARING WALLS. **MULTIPLE SQUASH BLOCKS** REQ'D UNDER CONCENTRATED LOADS. SEE FIGURE 1. **CANTILEVERED JOISTS** INCLUDING **CANT' OVER BRICK** REQ. I-JOIST BLOCKING ALONG BEARING AND RIMBOARD CLOSURE AT ENDS. SEE FIGURES 4 & 5 FOR REINFORCEMENT REQUIREMENTS. FOR **HOLES** INCLUDING **DUCT CHASE** AND **FIELD CUT OPENINGS** SEE FIGURE 7, TABLES 1 & 2. **CERAMIC TILE** APPLICATION AS PER O.B.C 9.30.6.

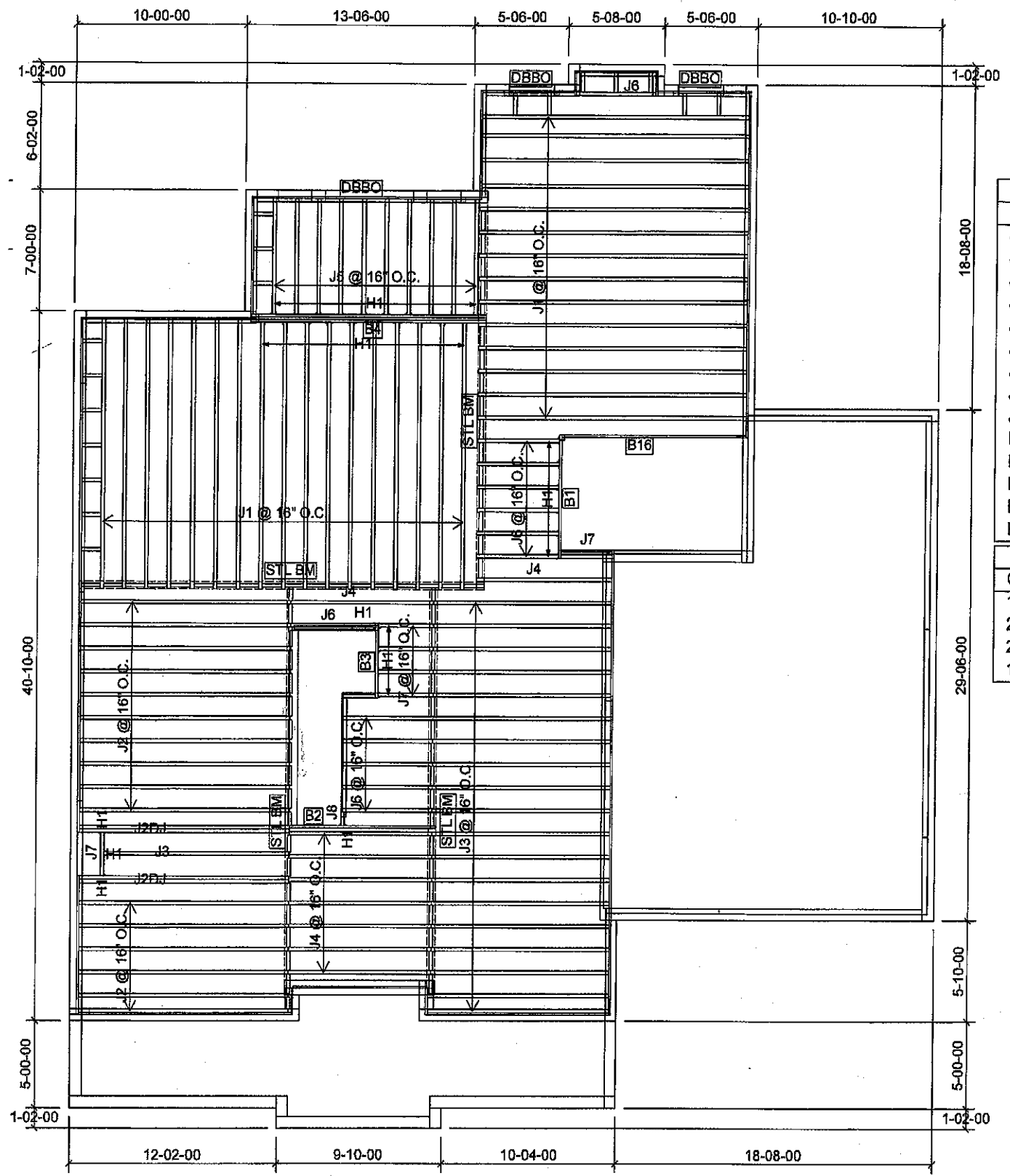
LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 20.0 lb/ft²

SUBFLOOR: 3/4" GLUED AND NAILED

DATE: 2019-07-10

1st FLOOR

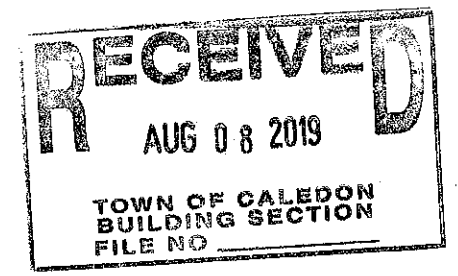
WALK OUT CONDITION

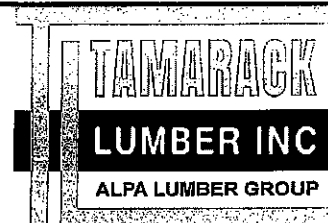


Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	31
J2	14-00-00	9 1/2" NI-40x	1	16
J2DJ	14-00-00	9 1/2" NI-40x	2	4
J3	12-00-00	9 1/2" NI-40x	1	20
J4	10-00-00	9 1/2" NI-40x	1	9
J5	8-00-00	9 1/2" NI-40x	1	10
J6	6-00-00	9 1/2" NI-40x	1	13
J7	4-00-00	9 1/2" NI-40x	1	6
J8	2-00-00	9 1/2" NI-40x	1	1
B4	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B16	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B2	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B1	8-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B3	6-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1

Connector Summary		
Qty	Manuf	Product
12	H1	IUS2.56/9.5
2	H1	IUS2.56/9.5
20	H1	IUS2.56/9.5
1	H1	IUS2.56/9.5

THIS STRUCTURE MUST BE
CONSTRUCTED TO MEET OR
EXCEED THE PROVISIONS OF
THE ONTARIO BUILDING CODE





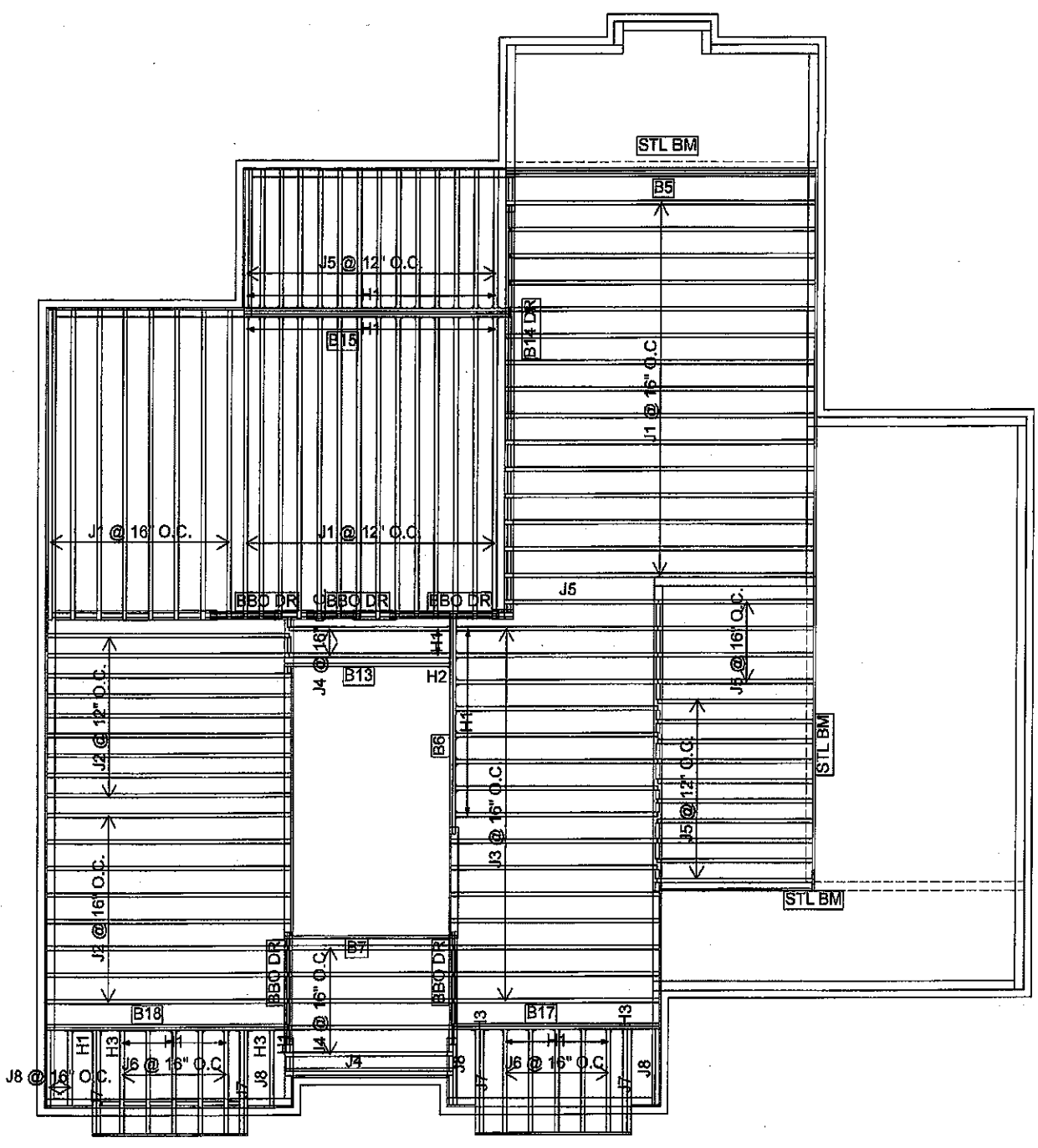
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LOADING:
DESIGN LOADS: L/480.000
LIVE LOAD: 40.0 lb/ft²
DEAD LOAD: 20.0 lb/ft²
SUBFLOOR: 5/8" GLUED AND NAILED

DATE: 2019-03-15

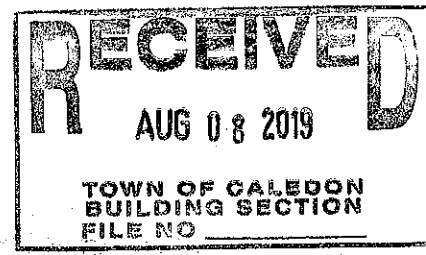
2nd FLOOR



Products				
PlotID	Length	Product	Plies	Net Qty
J1	16-00-00	9 1/2" NI-40x	1	37
J2	14-00-00	9 1/2" NI-40x	1	17
J3	12-00-00	9 1/2" NI-40x	1	15
J4	10-00-00	9 1/2" NI-40x	1	8
J5	8-00-00	9 1/2" NI-40x	1	29
J6	6-00-00	9 1/2" NI-40x	1	10
J7	6-00-00	9 1/2" NI-40x	2	8
J8	4-00-00	9 1/2" NI-40x	1	5
B18	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B15	14-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B17	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B6	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	2	2
B14 DR	12-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	3	3
B13	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B7	10-00-00	1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP	1	1
B5	16-00-00	1-3/4" x 14" VERSA-LAM® 2.0 3100 SP	3	3

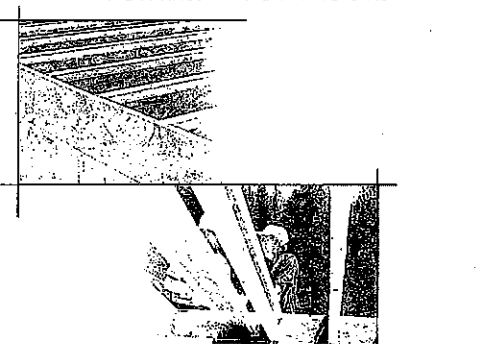
Connector Summary		
Qty	Manuf	Product
22	H1	IUS2.56/9.5
28	H1	IUS2.56/9.5
1	H2	HUS1.81/10
4	H3	HU310-2

THIS STRUCTURE MUST BE
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THE ONTARIO BUILDING CODE





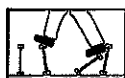
INSTALLATION GUIDE FOR RESIDENTIAL FLOORS



Distributed by:



SAFETY AND CONSTRUCTION PRECAUTIONS



Do not walk on I-joists until fully fastened and braced, or serious injuries can result.



Never stack building materials over unshored I-joists. Once sheathed, do not over-stress I-joist with concentrated loads from building materials.

WARNING

I-joists are not stable until completely installed, and will not carry any load until fully braced and sheathed.

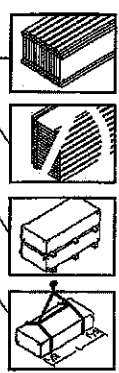
Avoid Accidents by Following these Important Guidelines:

1. Brace and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bracing of joists ends. When I-joists are applied continuously over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
2. When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent lateral rollover or buckling.
3. Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on center, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Lap ends of adjoining bracing over at least two I-joists.
4. For cantilevered I-joists, brace top and bottom flanges, and brace ends with cross panels, rim board, or cross-bracing.
5. Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.
6. Never install a damaged I-joist.

Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole size and location, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines carefully.

STORAGE AND HANDLING GUIDELINES

1. Bundle wrap can be slippery when wet. Avoid walking on wrapped bundles.
2. Store, stock, and handle I-joists vertically and level only.
3. Always stock and handle I-joists in the upright position only.
4. Do not store I-joists in direct contact with the ground and/or foliage.
5. Protect I-joists from weather, and use spacers to separate bundles.
6. Bundled units should be kept intact until time of installation.
7. When handling I-joists with a crane on the job site, take a few simple precautions to prevent damage to the I-joists and injury to your work crew.
8. Pick I-joists in bundles as shipped by the supplier.
9. Orient the bundles so that the webs of the I-joists are vertical.
10. Pick the bundles at the 5th points, using a spreader bar if necessary.
11. Do not handle I-joists in a horizontal orientation.
12. NEVER USE OR TRY TO REPAIR A DAMAGED I-JOIST.



MAXIMUM FLOOR SPANS

1. Maximum clear spans applicable to simple-span or multiple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.5L + 1.2D. The serviceability limit states include the consideration for floor vibration and a live load deflection limit of L/480. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for joist spacing of 24 inches. Adhesive shall meet the requirements given in C885-71.26 Standard. No concrete topping or bridging element may be assumed. Increased spans may be achieved with the use of gypsum and/or a row of blocking at mid-span.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
5. This span chart is based on uniform loads. For applications with other than uniform loads, an engineering analysis may be required based on the use of the design properties.
6. Tables are based on Limit States Design per CAN/CSA C885-09 Standard, and NBC 2010.
7. SI units conversion: 1 inch = 25.4 mm
1 foot = 0.305 m

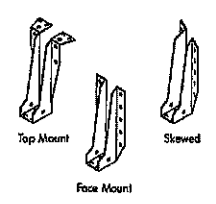
MAXIMUM FLOOR SPANS FOR NORDIC I-JOISTS SIMPLE AND MULTIPLE SPANS

Joist Depth	Joist Spacing	Simple Span				Multiple Span			
		19.2"	24"	30"	36"	19.2"	24"	30"	36"
9-1/2"	N-20	15'-1"	14'-2"	13'-3"	12'-4"	16'-3"	15'-4"	14'-5"	13'-6"
	N-40x	16'-1"	15'-2"	14'-3"	13'-4"	17'-3"	16'-4"	15'-5"	14'-6"
	N-60	16'-3"	15'-4"	14'-5"	13'-6"	17'-5"	16'-6"	15'-7"	14'-8"
	N-70	17'-1"	16'-2"	15'-3"	14'-4"	18'-3"	17'-4"	16'-5"	15'-6"
11-7/8"	N-20	17'-5"	16'-6"	15'-7"	14'-8"	18'-7"	17'-8"	16'-9"	15'-10"
	N-40x	18'-1"	17'-2"	16'-3"	15'-4"	19'-3"	18'-4"	17'-5"	16'-6"
	N-60	18'-4"	17'-5"	16'-6"	15'-7"	19'-6"	18'-7"	17'-8"	16'-9"
	N-70	19'-4"	18'-5"	17'-6"	16'-7"	20'-6"	19'-7"	18'-8"	17'-9"
14"	N-20	19'-9"	18'-10"	17'-11"	17'-0"	21'-9"	20'-10"	19'-11"	19'-0"
	N-40x	20'-5"	19'-6"	18'-7"	17'-8"	22'-5"	21'-6"	20'-7"	19'-8"
	N-60	20'-8"	19'-9"	18'-10"	17'-11"	22'-8"	21'-9"	20'-10"	19'-11"
	N-70	21'-8"	20'-9"	19'-10"	18'-11"	23'-8"	22'-9"	21'-10"	20'-11"
16"	N-20	20'-4"	19'-5"	18'-6"	17'-7"	22'-4"	21'-5"	20'-6"	19'-7"
	N-40x	21'-1"	20'-2"	19'-3"	18'-4"	23'-1"	22'-2"	21'-3"	20'-4"
	N-60	21'-4"	20'-5"	19'-6"	18'-7"	23'-4"	22'-5"	21'-6"	20'-7"
	N-70	22'-4"	21'-5"	20'-6"	19'-7"	24'-4"	23'-5"	22'-6"	21'-7"

CCWC EVALUATION REPORT 13032-R

I-JOIST HANGERS

1. Hangers shown illustrate the three most commonly used metal hangers to support I-joists.
2. All nailing must meet the hanger manufacturer's recommendations.
3. Hangers should be selected based on the joist depth, flange width and load capacity based on the maximum spans.
4. Web stiffeners are required when the sides of the hangers do not laterally brace the top flange of the I-joist.



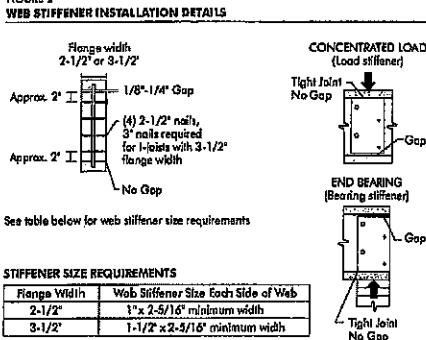
WEB STIFFENERS

RECOMMENDATIONS:

- A bearing stiffener is required in all engineered applications with factored reactions greater than shown in the I-joist properties table found in the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.
- A bearing stiffener is required when the I-joist is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and flange is at the top.
- A load stiffener is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the case of a cantilever, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.

SI units conversion: 1 inch = 25.4 mm

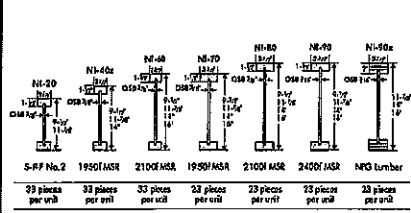
FIGURE 2
WEB STIFFENER INSTALLATION DETAILS



See table below for web stiffener size requirements

STIFFENER SIZE REQUIREMENTS		
Flange Width	Web Stiffener Size	Each Side of Web
2-1/2"	1" x 2-5/16"	minimum width
3-1/2"	1-1/2" x 2-5/16"	minimum width

NORDIC I-JOIST SERIES



Charifem Chikoungoum Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures throughout the manufacturing process. Every phase of the operation, from logging to the finished product, reflects our commitment to quality.

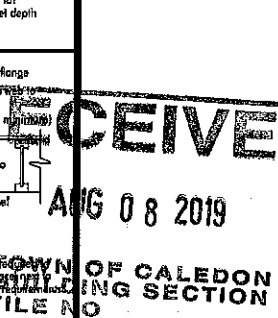
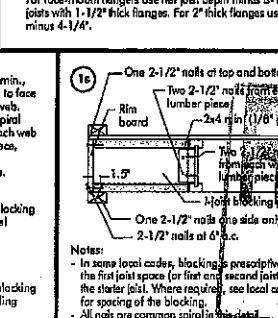
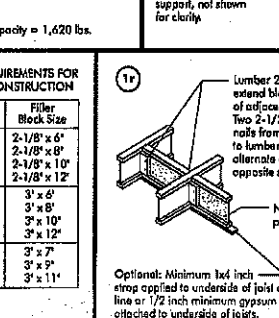
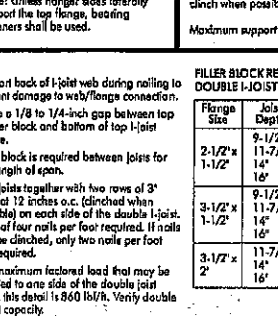
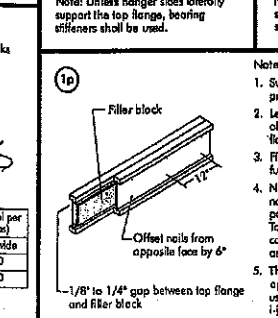
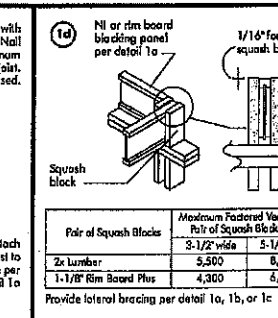
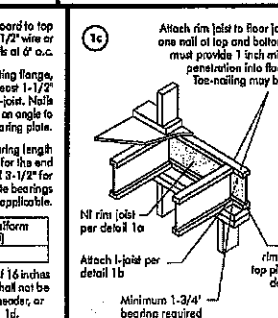
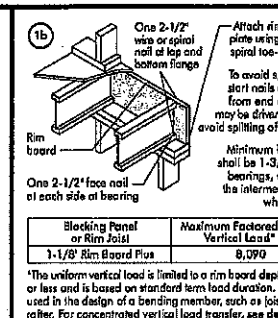
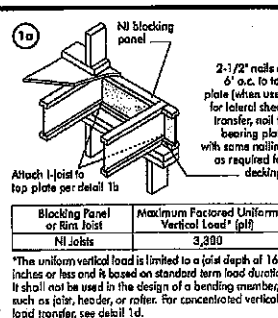
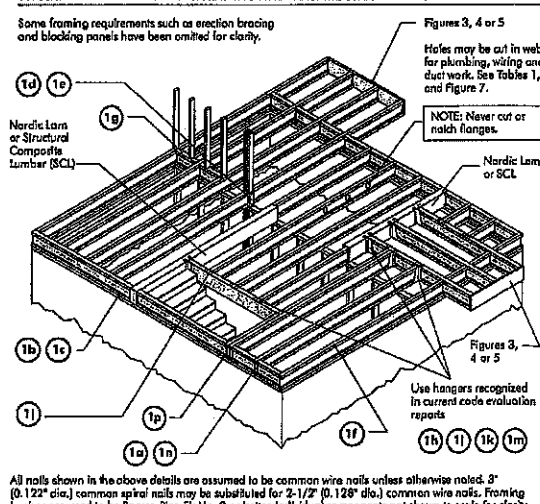
Nordic Engineered Wood I-joists use only finger-jointed lumber species: Larch, Spruce, Fir, and Pine. Nordic Engineered Wood I-joists are longer spanning capacity.

2015-04-16

INSTALLING NORDIC I-JOISTS

1. Before laying out floor system components, verify that I-joist flange widths match hanger widths. If not, contact your supplier.
2. Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.
3. Install I-joists so that top and bottom flanges are within 1/2 inch of true vertical alignment.
4. I-joists must be anchored securely to supports before floor sheathing is attached, and supports for multiple spans must be level.
5. Minimum bearing lengths: 1-3/4 inches for end bearings and 3-1/2 inches for intermediate bearings.
6. When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement.
7. Leave a 1/16-inch gap between the I-joist end and a header.
8. Concentrated loads greater than those that can normally be expected in residential construction should only be applied to the top surface of the top flange. Normal concentrated loads include track lighting fixtures, audio equipment and security cameras. Never suspend unusual or heavy loads from the I-joist's bottom flange. Whenever possible, suspend all concentrated loads from the top of the I-joist. Or, attach the load to blocking that has been securely fastened to the I-joist webs.
9. Never install I-joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.
10. Restrain ends of floor joists to prevent rollover. Use rim board, rim joists or I-joist blocking panels.
11. For I-joists installed over and beneath bearing walls, use full depth blocking panels, rim board, or squash blocks (cripple members) to transfer gravity loads through the floor system to the wall or foundation below.
12. Due to shrinkage, common framing lumber set on edge may never be used as blocking or rim boards. I-joist blocking panels or other engineered wood products—such as rim board—must be cut to fit between the I-joists, and on I-joist-compatible depth selected.
13. Provide permanent lateral support of the bottom flange of all I-joists at interior supports of multiple-span joists. Similarly, support the bottom flange of all cantilevered I-joists at the end support next to the cantilever extension. In the completed structure, the gypsum wallboard ceiling provides this lateral support. Until the final finished ceiling is applied, temporary bracing or struts must be used.
14. If square-edge panels are used, edges must be supported between I-joists with 2x4 blocking. Glue panels to blocking to minimize squeaks. Blocking is not required under structural finish flooring, such as wood strip flooring, or if a separate underlayment layer is installed.
15. Nail spacing: Space nails installed to the flange's top face in accordance with the applicable building code requirements or approved building plans.

FIGURE 1
TYPICAL NORDIC I-JOIST FLOOR FRAMING AND CONSTRUCTION DETAILS



*The uniform vertical load is limited to a joist depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

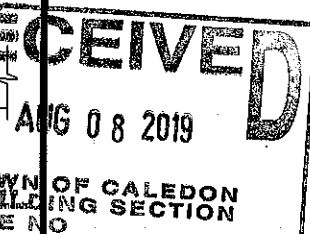
*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.

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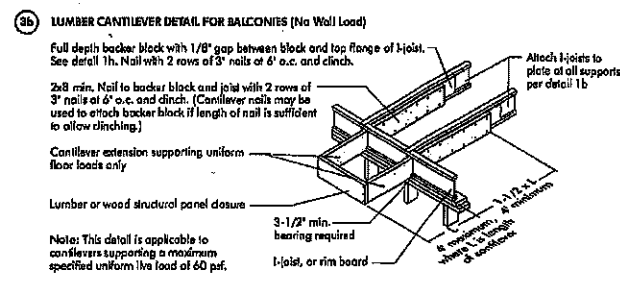
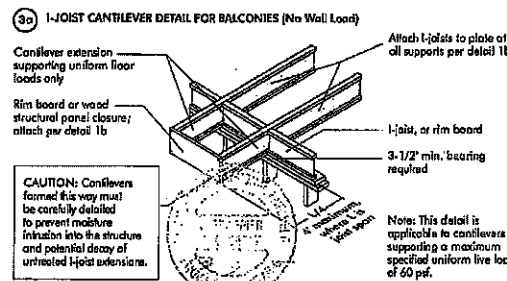
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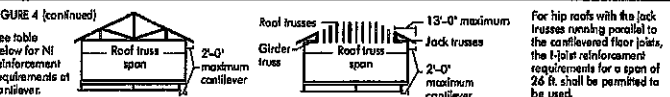
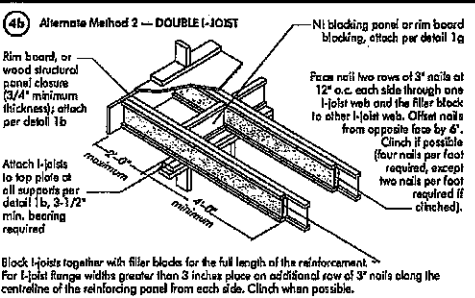
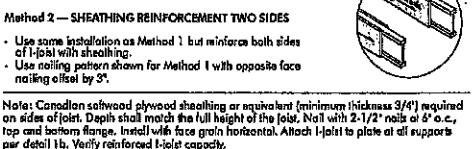
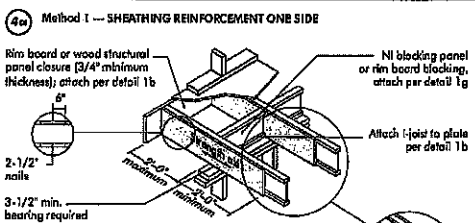
*The uniform vertical load is limited to a rim board depth of 16 inches or less and is based on standard term load duration. It shall not be used in the design of a bending member, such as joist, header, or rafter. For concentrated vertical load transfer, see detail 1d.



CANTILEVER DETAILS FOR BALCONIES (NO WALL LOAD)



CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)



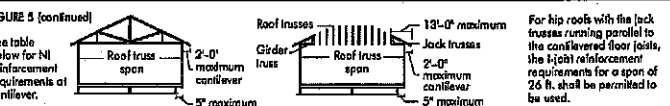
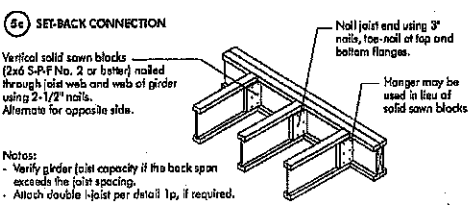
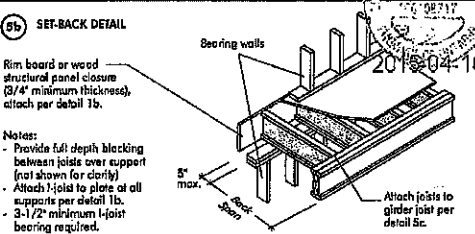
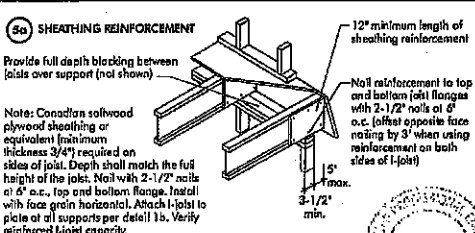
CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST SPACING (in)	12" MAX. JOIST SPACING				16" MAX. JOIST SPACING				24" MAX. JOIST SPACING			
	12"	16"	24"	36"	12"	16"	24"	36"	12"	16"	24"	36"
9-1/2"	N	N	N	N	N	N	N	N	N	N	N	N
11-7/8"	N	N	N	N	N	N	N	N	N	N	N	N
14"	N	N	N	N	N	N	N	N	N	N	N	N
16"	N	N	N	N	N	N	N	N	N	N	N	N

NOTES:

- N = No reinforcement required.
- 1 = N1 reinforced with 2x6 wood structural panel on one side only.
- 2 = N2 reinforced with 3/4" wood structural panel on both sides, or double I-joist.
- 3 = Try a closer joist or closer spacing.
- 4 = For larger openings, or multiple 3'-0" wide openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
- 5 = Try a closer joist or closer spacing.
- 6 = For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls as it is used.
- 7 = Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

BRICK CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET (CONCENTRATED WALL LOAD)



BRICK CANTILEVER REINFORCEMENT METHODS ALLOWED

JOIST SPACING (in)	12" MAX. JOIST SPACING				16" MAX. JOIST SPACING				24" MAX. JOIST SPACING			
	12"	16"	24"	36"	12"	16"	24"	36"	12"	16"	24"	36"
9-1/2"	N	N	N	N	N	N	N	N	N	N	N	N
11-7/8"	N	N	N	N	N	N	N	N	N	N	N	N
14"	N	N	N	N	N	N	N	N	N	N	N	N
16"	N	N	N	N	N	N	N	N	N	N	N	N

NOTES:

- N = No reinforcement required.
- 1 = N1 reinforced with 2x6 wood structural panel on one side only.
- 2 = N2 reinforced with 3/4" wood structural panel on both sides, or double I-joist.
- 3 = Try a closer joist or closer spacing.
- 4 = For larger openings, or multiple 3'-0" wide openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
- 5 = Try a closer joist or closer spacing.
- 6 = For conventional roof construction using a ridge beam, the Roof Truss Span column above is equivalent to the distance between the supporting wall and the ridge beam. When the roof is framed using a ridge beam, the Roof Truss Span is equivalent to the distance between the supporting walls as it is used.
- 7 = Cantilevered joists supporting girder trusses or roof beams may require additional reinforcing.

WEB HOLES

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- The distance between the inside edge of the support and the centreline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- Joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field-cut holes should be centred on the middle of the web.
- The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joist flange.
- The sides of square holes or longest sides of rectangular holes shall not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole for twice the length of the longest side of the longest rectangular hole or duct chase opening and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is not considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller shall be permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.
- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a workman-like manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

TABLE 1 LOCATION OF CIRCULAR HOLES IN JOIST WEBS

JOIST Depth	JOIST Series	Minimum distance from face of support to centre of hole (in)												Span Length
		12"	16"	24"	36"	48"	60"	72"	84"	96"	108"	120"	132"	
9-1/2"	N120	0.7	1.0	2.0	3.0	3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.4	13.6
	N144	0.7	1.0	2.0	3.0	3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.4	14.1
	N168	0.7	1.0	2.0	3.0	3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.4	14.6
	N192	0.7	1.0	2.0	3.0	3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.4	15.7
11-7/8"	N120	0.7	0.9	1.8	2.7	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	15.0
	N144	0.7	0.9	1.8	2.7	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	15.9
	N168	0.7	0.9	1.8	2.7	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	16.9
	N192	1.3	1.6	3.2	4.8	5.4	6.0	6.6	7.2	7.8	8.4	9.0	9.6	17.5
14"	N120	0.7	0.9	1.8	2.7	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	17.0
	N144	0.7	0.9	1.8	2.7	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	17.9
	N168	0.7	0.9	1.8	2.7	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	17.9
	N192	0.7	0.9	1.8	2.7	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	17.1
16"	N120	0.7	0.9	1.8	2.7	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	17.1
	N144	0.7	0.9	1.8	2.7	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	18.2
	N168	0.7	0.9	1.8	2.7	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	19.2
	N192	0.7	0.9	1.8	2.7	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	19.5
18"	N120	0.7	0.9	1.8	2.7	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	19.5
	N144	0.7	0.9	1.8	2.7	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	20.4
	N168	0.7	0.9	1.8	2.7	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	21.3
	N192	0.7	0.9	1.8	2.7	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	21.0

- Above table may be used for I-joist spacing of 24 inches on centre or less.
- Side location distance is measured from inside face of support to centre of hole.
- Distances in this table are based on uniformly loaded joists.

OPTIONAL:
The above table is based on the joist used at that maximum span. If the I-joists are placed at less than their full maximum span (see Manufacturer's literature), the minimum distance from the centreline of the hole to the face of any support (D) or given above may be reduced as follows:

Where: $D = \frac{S}{S_{max}} \times D_{min}$

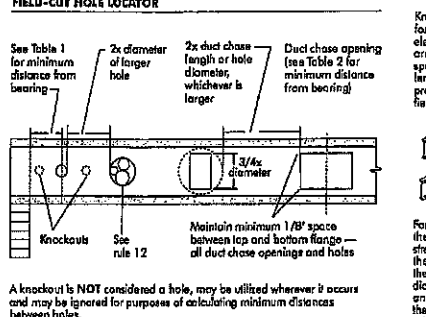
Where: D_{min} = Distance from the inside face of any support to centre of hole, reduced for less-than-maximum span application (see Manufacturer's literature).

Where: D_{max} = The actual measured span distance between the inside faces of supports (ft).

Where: S = Span Adjustment Factor given in this table.

Where: S_{max} = The minimum distance from the inside face of any support to centre of hole from this table, if D_{min} is greater than 1, use 1 in the above calculation for D_{min} .

FIGURE 7 FIELD-CUT HOLE LOCATOR



Knockouts are pre-cut holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on centre along the length of the I-joist. Where possible, it is preferable to use knockouts instead of field-cut holes.

Never drill, cut, or notch the flange, or over-cut the web.

Holes in webs should be cut with a sharp saw.

For rectangular holes, avoid one-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch diameter hole in each of the four corners and then making the cuts between the holes is another good method to minimize damage to the I-joist.

TABLE 2 DUCT CHASE OPENING SIZES AND LOCATIONS - Simple Span Only

DUCT CHASE OPENING SIZES AND LOCATIONS - Single span only													
JOIST DEPTH	JOIST SPACING	Minimum distance from face of support to centre of hole (in)											
		6"	10"	16"	24"	36"	48"	60"	72"	84"	96"	108"	120"
9-1/2"	N120	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	N144	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	N168	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	N192	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
11-7/8"	N120	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	N144	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	N168	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	N192	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
14"	N120	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	N144	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	N168	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	N192	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
16"	N120	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	N144	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	N168	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	N192	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

- Above table may be used for I-joist spacing of 24 inches on centre or less.
- Duct chase opening location distance is measured from inside face of support to centre of opening.
- The above table is based on simple-span joists only. For other applications, contact your local distributor.
- Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480. For other applications, contact your local distributor.

INSTALLING THE GLUED FLOOR SYSTEM

- Wipe any mud, dirt, water, or ice from I-joist flanges before gluing.
- Scrap a chalk line across the joists four feet from the wall for panel edge alignment and as a boundary for spreading glue.
- Spread only enough glue to lay one or two panels at a time, or follow specific recommendations from the glue manufacturer.
- Lay the first panel with tongue side to the wall, and nail in place. This protects the tongue of the next panel from damage when lapped into place with a block and sledgehammer.
- Apply a continuous line of glue (about 1/4-inch diameter) to the top flange of a single I-joist. Apply glue in a winding pattern on wide areas, such as with double I-joists.
- Apply two lines of glue on I-joists where panel ends but to assure proper gluing of each end.
- After the first row of panels is in place, spread glue in the groove of one or two panels at a time before laying the next row. Glue line may be continuous or spaced, but avoid squeeze-out by applying a thinner line (1/8 inch) then used on I-joist flanges.
- Tap the second row of panels into place, using a block to protect frame edges.
- Stagger and joint in each succeeding row of panels. A 1/8-inch space between all end joints and 1/8-inch at all edges, including T&G edges, is recommended. (Use a spacer tool or a 1-1/2" common nail to assure accurate and consistent spacing.)
- Complete all nailing of each panel before glue sets. Check the manufacturer's recommendations for cure time. (Warm weather accelerates glue setting.) Use 2" ring- or screw-shank nails for panels 3/4-inch thick or less, and 2-1/2" ring- or screw-shank nails for thicker panels. Space nails per the table below. Closer spacing may be required by some codes, or for diaphragm construction. The finished deck can be walked on right away and will carry construction loads without damage to the glue bond.

FASTENERS FOR SHEATHING AND SUBFLOORING(1)

Maximum joist spacing (in)	Minimum panel thickness (in)	Minimum fastener size and spacing (in)			
		Common Nail	Ring- or Screw-Shank Nail	Deck Screw	Deck Bolt
16	5/8	2"	1-3/4"	2"	6"
20	5/8	2"	1-3/4"	2"	6"
24	3/4	2"	1-3/4"	2"	6"

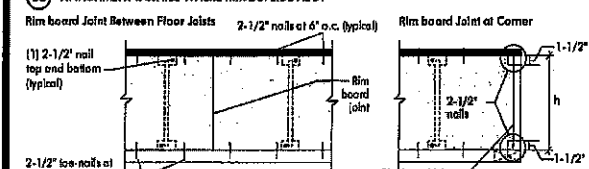
- Fasteners of sheathing and subflooring shall conform to the above table.
- Staples shall not be less than 1-1/2 inches in diameter or thickness, with not less than a 3/8-inch crown driven with the crown parallel to framing.
- Flooring screws shall not be less than 1/8-inch in diameter.
- Special conditions may impose heavy traffic and concentrated loads that require construction in excess of the minimums shown.
- Use only adhesive conforming to CAN/CGSB-71.26 Standard, Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems, applied in accordance with the manufacturer's recommendations. If OSB panels with sealed surfaces and edges are to be used, use only solvent-based glues; check with panel manufacturer.

Ref: NRC-CNRC, National Building Code of Canada 2010, Table 9.23.3.5.

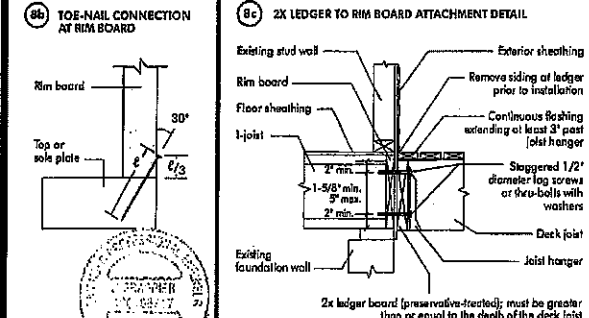
IMPORTANT NOTE:
Floor sheathing must be field glued to the I-joist flanges in order to achieve the maximum spans shown in this document. If sheathing is nailed only, I-joist spans must be verified with your local distributor.

RIM BOARD INSTALLATION DETAILS

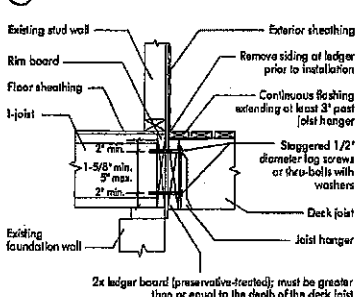
6a ATTACHMENT DETAILS WHERE RIM BOARDS ABUT



6b TOE-NAIL CONNECTION AT RIM BOARD



6c 2X LEDGER TO RIM BOARD ATTACHMENT DETAIL



PRODUCT WARRANTY

Champion Chibiogama guarantees that, in accordance with its specifications, Nordic products are free from manufacturing defects in material and workmanship.

Furthermore, Champion Chibiogama warrants that our products, when utilized in accordance with our handling and installation instructions, will meet or exceed our specifications for the lifetime of the structure.

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AUG 08 2019

TOWN OF CALEDON BUILDING SECTION

FILE NO

WEB HOLE SPECIFICATIONS

RULES FOR CUTTING HOLES AND DUCT CHASE OPENINGS:

- The distance between the inside edge of the support and the centerline of any hole or duct chase opening shall be in compliance with the requirements of Table 1 or 2, respectively.
- Joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
- Whenever possible, field-cut holes should be centered on the middle of the web.
- The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch. A minimum of 1/8 inch should always be maintained between the top or bottom of the hole or opening and the adjacent I-joist flange.

- The sides of square holes or rectangular holes should not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole or duct chase opening) and each hole and duct chase opening shall be sized and located in compliance with the requirements of Tables 1 and 2, respectively.
- A knockout is not considered a hole, may be utilized anywhere it occurs, and may be ignored for purposes of calculating minimum distances between holes and/or duct chase openings.
- Holes measuring 1-1/2 inches or smaller are permitted anywhere in a cantilevered section of a joist. Holes of greater size may be permitted subject to verification.

- A 1-1/2 inch hole or smaller can be placed anywhere in the web provided that it meets the requirements of rule number 6 above.
- All holes and duct chase openings shall be cut in a workmanlike manner in accordance with the restrictions listed above and as illustrated in Figure 7.
- Limit three maximum size holes per span, of which one may be a duct chase opening.
- A group of round holes of approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.

TABLE 1
LOCATION OF CIRCULAR HOLES IN JOIST WEBS

Simple or Multiple Span for Dead Loads up to 15 psf and Live Loads up to 40 psf

Joist Depth	Joist Series	Minimum Distance from Inside Face of Any Support to Centre of Hole (ft - in.)											
		Round Hole Diameter (in.)											
9-1/2"	N1-20	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
	N1-40x	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
	N1-60	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
	N1-70	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
	N1-80	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
11-7/8"	N1-20	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
	N1-40x	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
	N1-60	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
	N1-70	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
	N1-80	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
14"	N1-20	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
	N1-40x	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
	N1-60	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
	N1-70	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
	N1-80	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
16"	N1-20	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
	N1-40x	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
	N1-60	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
	N1-70	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"
	N1-80	0-7/8"	1-1/8"	2-1/8"	3-1/8"	4-1/8"	5-1/8"	6-1/8"	7-1/8"	8-1/8"	9-1/8"	10-1/8"	11-1/8"

- Above table may be used for I-joist spacing of 24 inches on center or less.
- Hole location distances are measured from inside face of supports to centre of hole.
- Distances in this chart are based on uniformly loaded joists.
- The above table is based on the I-joists being used at their maximum spans. The minimum distances as given above may be reduced for shorter spans; contact your local distributor.

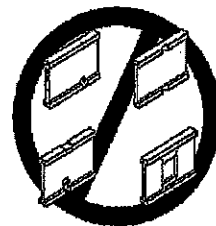
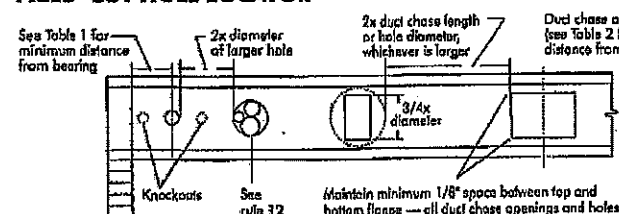
TABLE 2
DUCT CHASE OPENING SIZES AND LOCATIONS

Simple Span Only

Joist Depth	Joist Series	Minimum Distance from Inside Face of Supports to Centre of Opening (ft - in.)											
		Duct Chase Length (in.)											
9-1/2"	N1-20	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
	N1-40x	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
	N1-60	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
	N1-70	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
	N1-80	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
11-7/8"	N1-20	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
	N1-40x	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
	N1-60	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
	N1-70	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
	N1-80	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
14"	N1-20	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
	N1-40x	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
	N1-60	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
	N1-70	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
	N1-80	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
16"	N1-20	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
	N1-40x	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
	N1-60	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
	N1-70	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"
	N1-80	8-1/2"	10-1/2"	12-1/2"	14-1/2"	16-1/2"	18-1/2"	20-1/2"	22-1/2"	24-1/2"	26-1/2"	28-1/2"	30-1/2"

- Above table may be used for I-joist spacing of 24 inches on center or less.
- Duct chase opening location distance is measured from inside face of supports to centre of opening.
- The above table is based on simple-span joists only. For other applications, contact your local distributor.
- Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480.
- The above table is based on the I-joists being used at their maximum spans. The minimum distances as given above may be reduced for shorter spans; contact your local distributor.

FIGURE 7
FIELD-CUT HOLE LOCATOR



Knockouts are predrilled holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on center along the length of the I-joist. Where possible, it is preferable to use knockouts instead of field-cut holes.

Never drill, cut or notch the flange, or over-cut the web.

Holes in webs should be cut with a sharp saw.

For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch diameter hole in each of the four corners and then making the cuts between the holes is another good method to minimize damage to the I-joist.

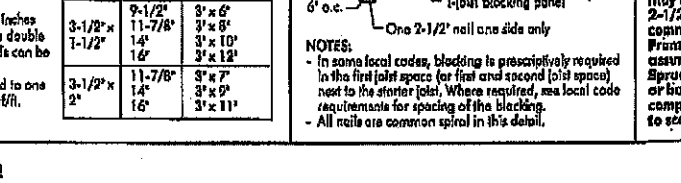
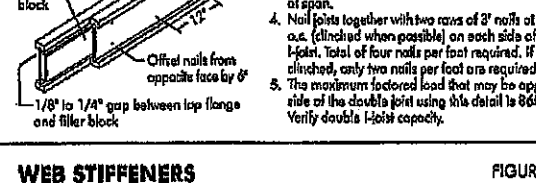
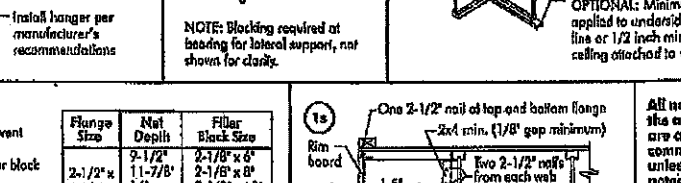
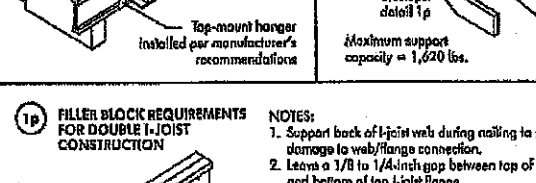
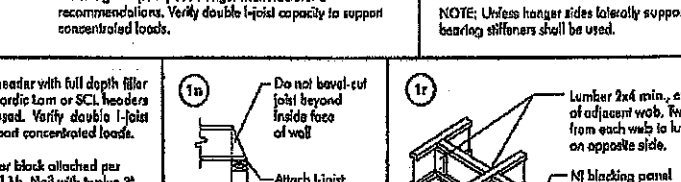
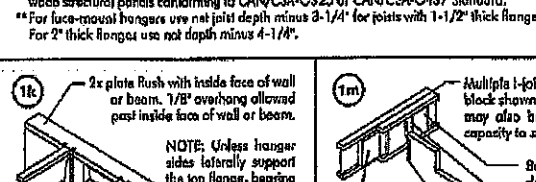
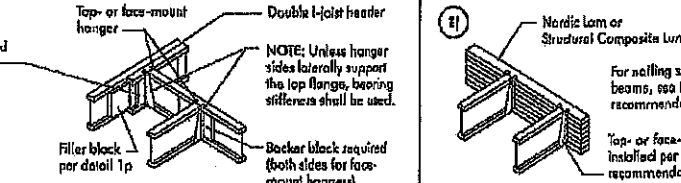
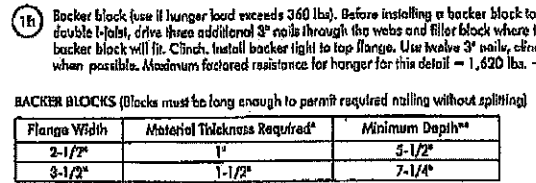
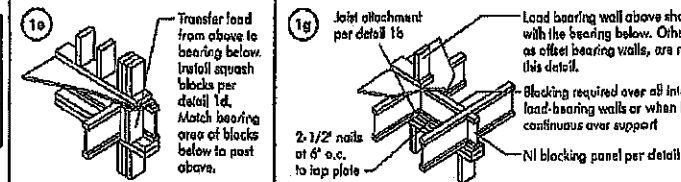
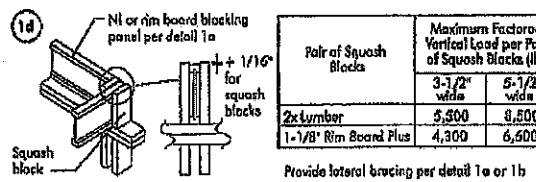
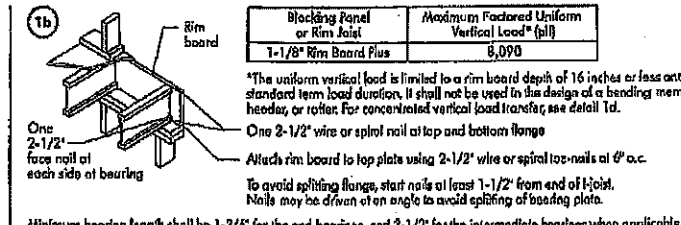
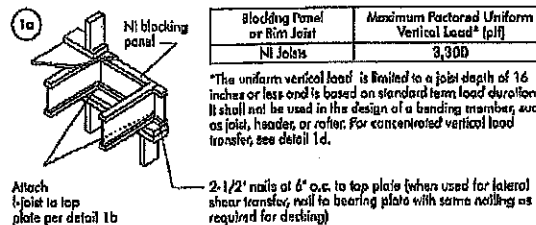
SAFETY AND CONSTRUCTION PRECAUTIONS

- WARNING:** I-joists are not stable until completely installed, and will not carry any load until fully braced and sheathed.
- AVOID ACCIDENTS BY FOLLOWING THESE IMPORTANT GUIDELINES:**
- Break and nail each I-joist as it is installed, using hangers, blocking panels, rim board, and/or cross-bracing at joist ends. When I-joists are applied continuously over interior supports and a load-bearing wall is planned at that location, blocking will be required at the interior support.
 - When the building is completed, the floor sheathing will provide lateral support for the top flanges of the I-joists. Until this sheathing is applied, temporary bracing, often called struts, or temporary sheathing must be applied to prevent I-joist rollover or buckling.
 - Temporary bracing or struts must be 1x4 inch minimum, at least 8 feet long and spaced no more than 8 feet on center, and must be secured with a minimum of two 2-1/2" nails fastened to the top surface of each I-joist. Nail the bracing to a lateral restraint at the end of each bay. Top ends of adjoining bracing over at least two I-joists.
 - Or sheathing (temporary or permanent) can be nailed to the top flange of the first 4 feet of I-joists at the end of the bay.
 - For cantilevered I-joists, brace top and bottom flanges, and brace ends with closure panels, rim board, or cross-bracing.
 - Install and fully nail permanent sheathing to each I-joist before placing loads on the floor system. Then, stack building materials over beams or walls only.
 - Never install a damaged I-joist.
- Improper storage or installation, failure to follow applicable building codes, failure to follow span ratings for Nordic I-joists, failure to follow allowable hole sizes and locations, or failure to use web stiffeners when required can result in serious accidents. Follow these installation guidelines carefully.

PRODUCT WARRANTY

Champion Chibogawana guarantees that, in accordance with our specifications, Nordic products are free from manufacturing defects in material and workmanship.

Furthermore, Champion Chibogawana warrants that our products, when utilized in accordance with our handling and installation instructions, will meet or exceed our specifications for the lifetime of the structure.

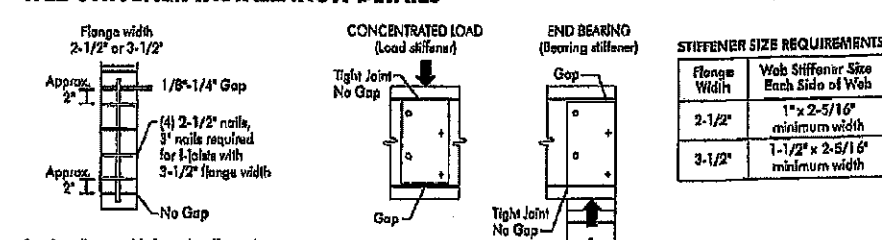


WEB STIFFENERS

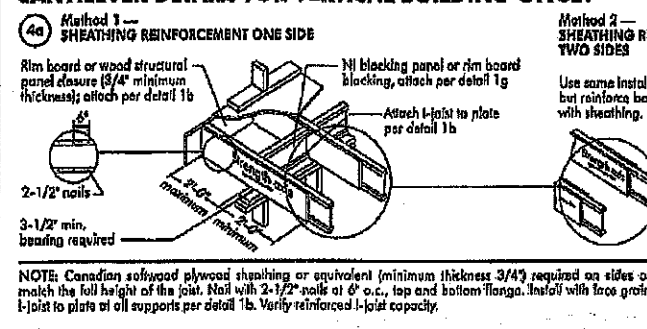
RECOMMENDATIONS:

- A bearing stiffener is required in all engineered applications with factored reactions greater than shown in the I-joist properties table with the I-joist Construction Guide (C101). The gap between the stiffener and the flange is at the top.
- A bearing stiffener is required when the I-joist is supported in a hanger and the sides of the hanger do not extend up to, and support, the top flange. The gap between the stiffener and the flange is at the top.
- A load stiffener is required at locations where a factored concentrated load greater than 2,370 lbs is applied to the top flange between supports, or in the case of cantilevers, anywhere between the cantilever tip and the support. These values are for standard term load duration, and may be adjusted for other load durations as permitted by the code. The gap between the stiffener and the flange is at the bottom.

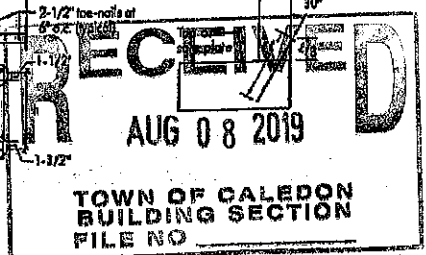
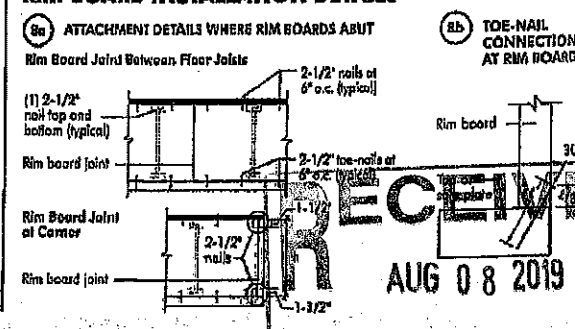
FIGURE 2
WEB STIFFENER INSTALLATION DETAILS

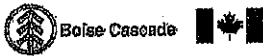


CANTILEVER DETAILS FOR VERTICAL BUILDING OFFSET



RIM BOARD INSTALLATION DETAILS





Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1ST FLR FRAMING\Flush Beams\B1\13352

Dry | 1 span | No cant.

June 26, 2019 08:07:42

BC CALC® Member Report

Build 7118

Job name:

Address:

City, Province, Postal Code: CAR...ON

Customer:

Code reports: CCMC 12472-R

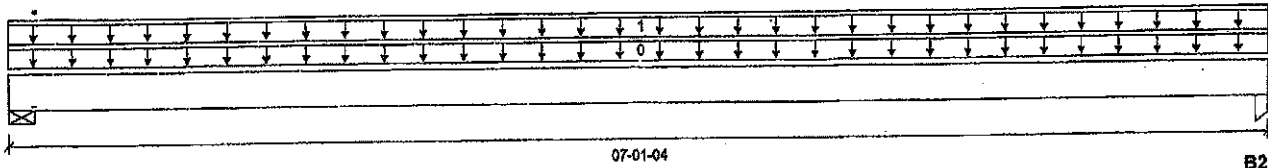
File name: BARTON 8.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B1\13352

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 07-01-04

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	389 / 0	207 / 0		
B2, 3-1/2"	358 / 0	191 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	07-01-04	Top	1.90	0.65	1.00	1.15	00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	07-01-04	Top	104	50			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,051 ft-lbs	11,610 ft-lbs	9.1%	1	04-01-00
End Shear	572 lbs	5,785 lbs	9.9%	1	01-03-00
Total Load Deflection	L/999 (0.022")	n/a	n/a	4	03-08-00
Live Load Deflection	L/999 (0.014")	n/a	n/a	5	03-08-00
Max Defl.	0.022"	n/a	n/a	4	03-08-00
Span / Depth	8.2				

			Demand/ Resistance Support	Demand/ Resistance Member	Material	
Bearing Supports	Dim. (LxW)	Demand				
B1	Wall/Plate	5-1/2" x 1-3/4"	842 lbs	16.4%	7.2%	Unspecified
B2	Column	3-1/2" x 1-3/4"	775 lbs	15.6%	10.4%	Unspecified



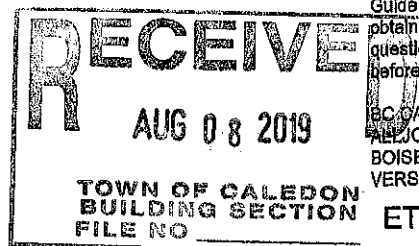
DESIGN CONFORMS TO OBC2012

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9

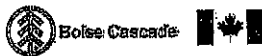
Disclosure

Use of the Boise Cascade Software is subject to the terms of the End User License Agreement (EULA).
 Completeness and accuracy of Input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability for a particular application. The output here is based on building code-accepted design properties and analysis methods.
 Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.



BC CALC®, BC FRAMER®, AJS™, ALJO ST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

ET0000436



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1ST FLR FRAMING\Flush Beams\B2(13519)

Dry | 1 span | No cant.

June 26, 2019 08:07:42

BC CALC® Member Report

Build 7118

Job name:

Address:

City, Province, Postal Code: CAR...ON

Customer:

Code reports: CCMC 12472-R

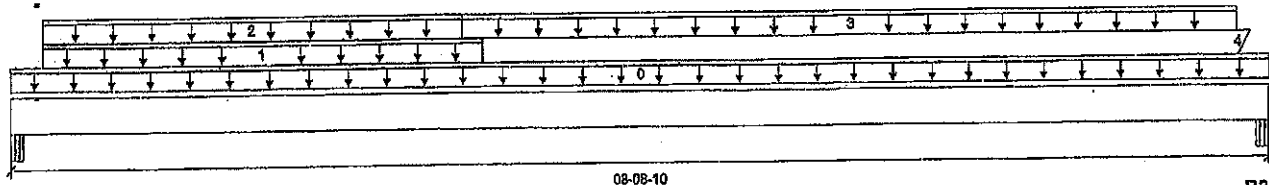
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Description: 1ST FLR FRAMING\Flush Beams\B2(13519)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 08-08-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 2-5/8"	658 / 0	350 / 0		
B2, 5-1/4"	300 / 0	191 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.85	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-08-10	Top		5			00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-02-10	03-03-03	Top	240	120			n/a
2	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-02-10	03-01-08	Top	9	5			n/a
3	FC1 Floor Material	Unf. Lin. (lb/ft)	L	03-01-08	08-06-00	Top	27	13			n/a
4	20(1076)	Conc. Pt. (lbs)	L	08-06-02	08-06-02	Top	54	47			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,966 ft-lbs	11,610 ft-lbs	16.9%	1	02-10-05
End Shear	993 lbs	5,785 lbs	17.2%	1	01-00-02
Total Load Deflection	L/999 (0.061")	n/a	n/a	4	03-11-02
Live Load Deflection	L/999 (0.039")	n/a	n/a	5	03-11-02
Max Defl.	0.061"	n/a	n/a	4	03-11-02
Span / Depth	10.3				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	2-5/8" x 1-3/4"	1,424 lbs	58.1%	25.4%	Unspecified
B2 Beam	5-1/4" x 1-3/4"	689 lbs	14.0%	6.1%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9



DESIGN CONFORMS TO OBC2012

Disclosure

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 Completeness and accuracy of input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability for a particular application. The output here is based on building code-accepted design properties and analysis methods.
 Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCi®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

ET0000435



Boise Cascade



Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

1ST FLR FRAMING\Flush Beams\B4\I3513

Dry | 1 span | No cant.

PASSED

June 26, 2019 08:07:42

BC CALCO® Member Report

Build 7118

Job name:

Address:

City, Province, Postal Code: CAR...ON

Customer:

Code reports: CCMC 12472-R

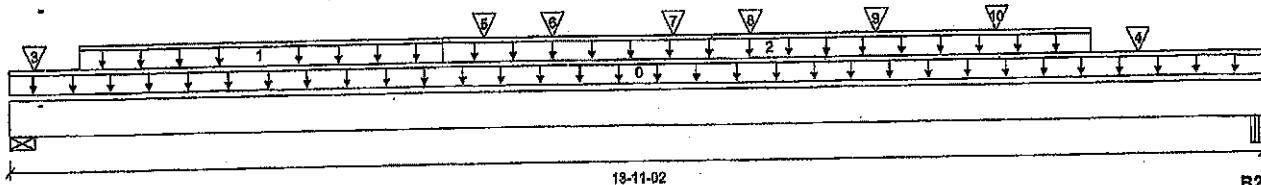
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Description: 1ST FLR FRAMING\Flush Beams\B4\I3513

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 13-11-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/4"	6,197 / 0	3,357 / 0		
B2, 5-1/4"	2,988 / 0	1,594 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	13-11-02	Top		14			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-09-04	04-09-04	Top	450	225			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	04-09-04	12-00-00	Top	288	144			n/a
3	-	Conc. Pt. (lbs)	L	00-03-06	00-03-06	Top	3,543	1,913			n/a
4	-	Conc. Pt. (lbs)	L	12-06-05	12-06-05	Top	777	389			n/a
5	J5DJ\I3345	Conc. Pt. (lbs)	L	05-03-00	05-03-00	Top	161	80			n/a
6	J6\I3617	Conc. Pt. (lbs)	L	06-00-00	06-00-00	Top	123	61			n/a
7	J6\I3379	Conc. Pt. (lbs)	L	07-04-00	07-04-00	Top	128	64			n/a
8	J5DJ\I3612	Conc. Pt. (lbs)	L	08-02-00	08-02-00	Top	186	93			n/a
9	J5\I3481	Conc. Pt. (lbs)	L	09-07-02	09-07-02	Top	193	97			n/a
10	J5\I3401	Conc. Pt. (lbs)	L	10-11-02	10-11-02	Top	187	93			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	21,530 ft-lbs	36,222 ft-lbs	59.4%	1	07-04-00
End Shear	6,451 lbs	17,356 lbs	37.2%	1	12-08-06
Total Load Deflection	L/249 (0.634")	n/a	98.3%	4	07-00-00
Live Load Deflection	L/382 (0.414")	n/a	94.3%	5	07-00-00
Max Defl.	0.634"	n/a	n/a	4	07-00-00
Span / Depth	18.6				

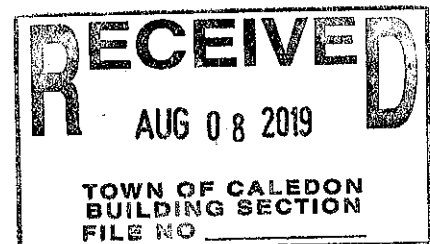
Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/4" x 5-1/4"	13,491 lbs	91.7%	40.1%	Unspecified
B2	Beam 5-1/4" x 5-1/4"	6,474 lbs	44.0%	19.3%	Unspecified

Nail one ply to another with
3 1/2" spiral nails @ 6"
o.c., staggered in 2 rows



DESIGN CONFORMS TO OBC2012



ET0000433

THIS STRUCTURE MUST BE
CONSTRUCTED TO MEET OR
EXCEED THE PROVISIONS OF
THE ONTARIO BUILDING CODE



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

1ST FLR FRAMING\Flush Beams\B3(i3470)

Dry | 2 spans | R cant.

June 26, 2019 08:07:42

BC CALC® Member Report

Build 7118

Job name:

File name: BARTON 8.mmdl

Address:

Description: 1ST FLR FRAMING\Flush Beams\B3(i3470)

City, Province, Postal Code: CAR...ON

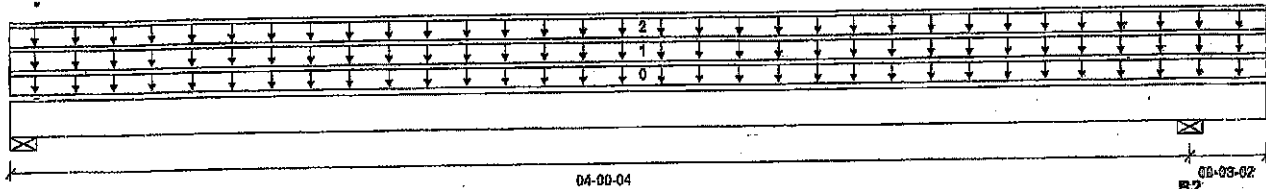
Specifier:

Customer:

Designer: AJ

Code reports: CCMC 12472-R

Company:



B1

Total Horizontal Product Length = 04-03-06

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 3-1/2"	691 / 9	352 / 0		
B2, 3-1/2"	792 / 0	407 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	04-03-06	Top	1.00	0.65	1.00	1.15	00-00-00
1	STAIR	Unf. Lin. (lb/ft)	L	00-00-00	04-03-06	Top	240	120			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	00-00-00	04-03-06	Top	102	52			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	1,156 ft-lbs	11,610 ft-lbs	10.0%	2	02-01-02
Neg. Moment	-74 ft-lbs	-11,610 ft-lbs	0.6%	1	04-00-04
End Shear	720 lbs	5,785 lbs	12.4%	2	01-01-00
Cont. Shear	713 lbs	5,785 lbs	12.3%	1	03-01-00
Total Load Deflection	L/999 (0.008")	n/a	n/a	9	02-01-10
Live Load Deflection	L/999 (0.008")	n/a	n/a	12	02-01-10
Total Neg. Defl.	2xL/1,998 (-0.002")	n/a	n/a	9	04-03-06
Max Defl.	0.008"	n/a	n/a	9	02-01-10
Span / Depth	4.8				



DESIGN CONFORMS TO OBC2012

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 3-1/2" x 1-3/4"	1,477 lbs	45.1%	19.8%	Unspecified
B2	Wall/Plate 3-1/2" x 1-3/4"	1,697 lbs	51.9%	22.7%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9
 Cantilevers require sheathed bottom flanges, blocking at cantilever support and closure at ends.

Disclosure

Use of the Boise Cascade Software is subject to the terms of the End User License Agreement (EULA).
 Completeness and accuracy of input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability for a particular application. The output here is based on building code-accepted design properties and analysis methods.
 Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BC®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

ET0000437



Bolsa Cascade

**Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****1ST FLR FRAMING\Flush Beams\B16(i3369)**

Dry | 1 span | No cant.

PASSED

June 26, 2019 08:07:42

BC CALC® Member Report

Build 7118

Job name:

Address:

City, Province, Postal Code: CAR...ON

Customer:

Code reports: CCMC 12472-R

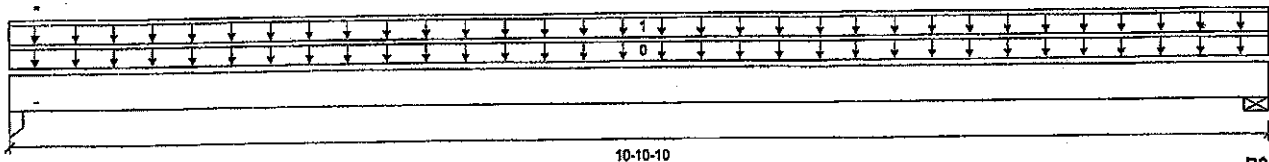
File name: BARTON 8.mmdl

Description: 1ST FLR FRAMING\Flush Beams\B16(i3369)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 10'-10-10

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 1-3/4"	123 / 0	88 / 0		
B2, 2-3/8"	123 / 0	88 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-10-10	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC1 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	10-10-10	Top	23	11			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	786 ft-lbs	11,610 ft-lbs	6.6%	1	05-05-00
End Shear	241 lbs	5,785 lbs	4.2%	1	00-11-04
Total Load Deflection	L/999 (0.045")	n/a	n/a	4	05-05-00
Live Load Deflection	L/999 (0.026")	n/a	n/a	5	05-05-00
Max Defl.	0.045"	n/a	n/a	4	05-05-00
Span / Depth	13.5				

			Demand/Resistance Support	Demand/Resistance Member	Material	
Bearing Supports	Dim. (LxW)	Demand				
B1	Column	1-3/4" x 1-3/4"	294 lbs	11.8%	7.9%	Unspecified
B2	Wall/Plate	2-3/8" x 1-3/4"	294 lbs	13.3%	5.8%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9



DESIGN CONFORMS TO OBC2012

Disclosure

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BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®

ET0000434



Boise Cascade



Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B15(12857)

Dry | 1 span | No cant.

June 26, 2019 08:07:42

BC CALCO Member Report

Bulld 7118

Job name:

Address:

City, Province, Postal Code: CAR...ON

Customer:

Code reports: CCMC 12472-R

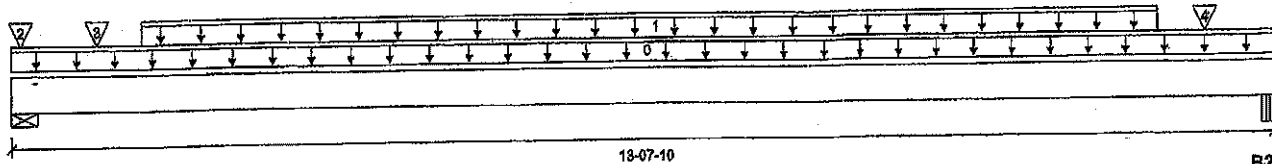
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Description: 2ND FLR FRAMING\Flush Beams\B15(12857)

Specifier:

Designer: AJ

Company:



B1

Total Horizontal Product Length = 13-07-10

B2

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	3,121 / 0	1,665 / 0		
B2, 2-5/8"	2,873 / 0	1,540 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.85	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	13-07-10	Top		14			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	01-04-14	12-04-14	Top	448	225			n/a
2	J1(13121)	Conc. Pt. (lbs)	L	00-01-04	00-01-04	Top	256	128			n/a
3	-	Conc. Pt. (lbs)	L	00-10-14	00-10-14	Top	404	202			n/a
4	-	Conc. Pt. (lbs)	L	12-10-14	12-10-14	Top	404	202			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/ Resistance	Case	Location
Pos. Moment	21,135 ft-lbs	36,222 ft-lbs	58.3%	1	06-10-14
End Shear	5,918 lbs	17,356 lbs	34.1%	1	01-01-14
Total Load Deflection	L/255 (0.621")	n/a	94.2%	4	06-10-14
Live Load Deflection	L/391 (0.405")	n/a	92.1%	5	06-10-14
Max Defl.	0.621"	n/a	n/a	4	06-10-14
Span / Depth	16.6				

Bearing Supports	Dim. (LxW)	Demand	Demand/ Resistance Support	Demand/ Resistance Member	Material
B1	Wall/Plate 4-3/8" x 5-1/4"	6,763 lbs	55.1%	24.1%	Unspecified
B2	Beam 2-5/8" x 5-1/4"	6,234 lbs	41.5%	37.1%	Unspecified



DESIGN CONFORMS TO OBC2012

Notes

Design meets Code minimum (L/240) Total load deflection criteria.

Design meets Code minimum (L/360) Live load deflection criteria.

Calculations assume member is fully braced.

Resistance Factor phi has been applied to all presented results per CSA O86.

BC CALCO analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.

Design based on Dry Service Condition.

Importance Factor: Normal Part code: Part 9

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Nailing schedule applies to both sides of the member.

Nail one ply to another with
3 1/2" spiral nails @ 6"
o.c., staggered in 2 rows

THIS STRUCTURE MUST BE
CONSTRUCTED TO MEET OR
EXCEED THE PROVISIONS OF
THE ONTARIO BUILDING CODE



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING\Flush Beams\B6(13294)**

Dry | 1 span | No cant.

June 26, 2019 08:07:42

BC CALC® Member Report

Build 7118

Job name:

Address:

City, Province, Postal Code: CAR...ON

Customer:

Code reports: CCMC 12472-R

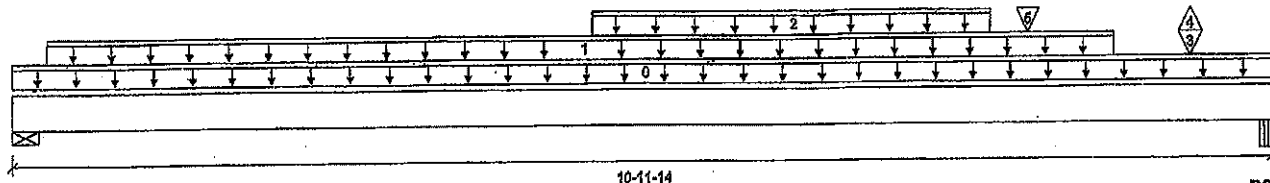
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Description: 2ND FLR FRAMING\Flush Beams\B6(13294)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 10-11-14

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	1,514 / 0	815 / 0		
B2, 2-1/4"	1,919 / 5	1,024 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-11-14	Top		10			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-03-08	09-07-08	Top	214	108			n/a
2	STAIR	Unf. Lin. (lb/ft)	L	05-00-04	08-08-04	Top	240	120			n/a
3	-	Conc. Pt. (lbs)	L	10-03-08	10-03-08	Top	324	159			n/a
4	-	Conc. Pt. (lbs)	L	10-03-08	10-03-08	Top	-5				n/a
5	-	Conc. Pt. (lbs)	L	08-10-04	08-10-04	Top	257	148			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	10,992 ft-lbs	23,220 ft-lbs	47.3%	1	08-03-08
End Shear	3,904 lbs	11,571 lbs	33.7%	1	10-00-02
Total Load Deflection	L/417 (0.305")	n/a	57.6%	6	05-07-14
Live Load Deflection	L/638 (0.199")	n/a	56.4%	8	05-07-14
Max Defl.	0.305"	n/a	n/a	6	05-07-14
Span / Depth	13.4				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 3-1/2"	3,289 lbs	44.0%	19.3%	Unspecified
B2	Beam 2-1/4" x 3-1/2"	4,159 lbs	98.9%	43.3%	Unspecified



DESIGN CONFORMS TO OBC2012

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9
 Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.

Nail one ply to another with
 3 1/2" spiral nails @ 12"
 o.c, staggered in 2 rows



Triple 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP
2ND FLR FRAMING/Dropped Beams/B14 DR(I3528)
 Dry | 1 span | No cant.

PASSED

June 26, 2019 08:07:42

BC CALCO Member Report

Build 7118

Job name:

Address:

City, Province, Postal Code: CAR...ON

Customer:

Code reports: CCMC 12472-R

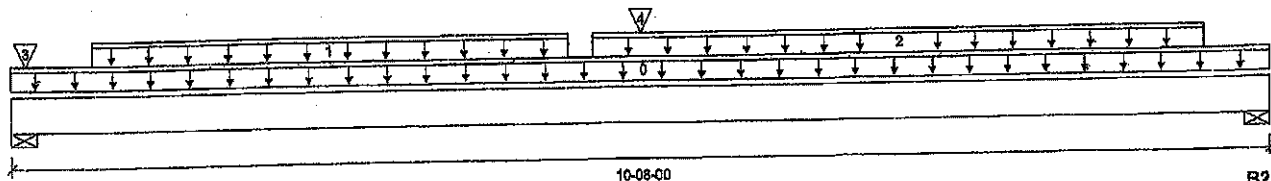
File name: BARTON 8.mmdl

Description: 2ND FLR FRAMING/Dropped Beams/B14 DR(I3528)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 10-08-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4"	3,319 / 0	1,787 / 0		
B2, 4"	2,977 / 0	1,617 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.85	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	10-08-00	Top		14			00-00-00
1	Smoothed Load	Unf. Lin. (lb/ft)	L	00-08-04	04-08-04	Top	309	154			n/a
2	Smoothed Load	Unf. Lin. (lb/ft)	L	04-10-12	10-01-08	Top	315	158			n/a
3	J1(I3598)	Conc. Pt. (lbs)	L	00-01-08	00-01-08	Top	408	204			n/a
4	B15(I2857)	Conc. Pt. (lbs)	L	05-03-10	05-03-10	Top	2,868	1,537			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	24,713 ft-lbs	36,222 ft-lbs	68.2%	1	05-03-10
End Shear	6,466 lbs	17,356 lbs	37.3%	1	09-08-08
Total Load Deflection	L/324 (0.375")	n/a	74.1%	4	05-03-10
Live Load Deflection	L/499 (0.244")	n/a	72.2%	5	05-03-10
Max Defl.	0.375"	n/a	n/a	4	05-03-10
Span / Depth	12.8				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4" x 5-1/4"	7,212 lbs	42.3%	28.2%	Unspecified
B2	Wall/Plate 4" x 5-1/4"	6,487 lbs	38.0%	25.3%	Unspecified

Notes

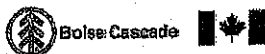
Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume unbraced length of Top: 00-07-09, Bottom: 00-07-09.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALCO analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9
 Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.
 Nailing schedule applies to both sides of the member.
 Member has no side loads.

Nail one ply to another with
 3 1/2" spiral nails @ 12"
 o.c. staggered in 2 rows

(Top LOADED)



DESIGN CONFORMS TO OBC2012



Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B13(12918)

Dry | 1 span | No cant.

June 26, 2019 08:07:42

BC CALC® Member Report

Build 7118

Job name:

Address:

City, Province, Postal Code: CAR...ON

Customer:

Code reports: CCMC.12472-R

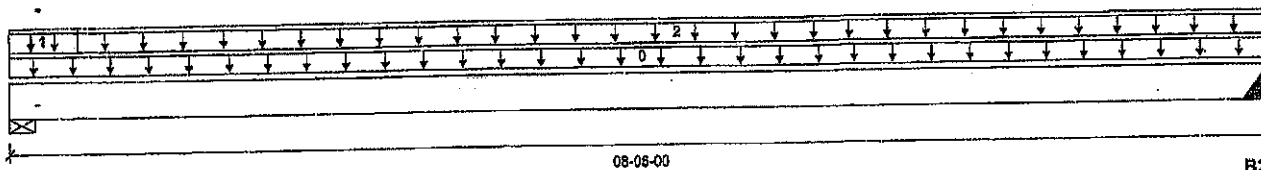
File name: BARTON 8.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B13(12918)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 08-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-1/2"	48 / 0	45 / 0		
B2, 2"	45 / 0	42 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-06-00	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	00-05-08	Top	10	5			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-05-08	08-06-00	Top	11	6			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	236 ft-lbs	11,810 ft-lbs	2.0%	1	04-04-12
End Shear	93 lbs	5,785 lbs	1.6%	1	01-03-00
Total Load Deflection	L/999 (0.008")	n/a	n/a	4	04-04-12
Live Load Deflection	L/999 (0.004")	n/a	n/a	5	04-04-12
Max Defl.	0.008"	n/a	n/a	4	04-04-12
Span / Depth	10.1				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-1/2" x 1-3/4"	128 lbs	2.5%	1.1%	Unspecified
B2	Hanger 2" x 1-3/4"	121 lbs	n/a	2.8%	HUS1.81/10

Cautions

Header for the hanger HUS1.81/10 at B2 is a Double 1-3/4" x 9-1/2" VERSA-LAM® 1.7 2400 DF. Hanger model HUS1.81/10 and seat length were input by the user.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Calculations assume member is fully braced.
Hanger Manufacturer: Unassigned
Resistance Factor phi has been applied to all presented results per CSA O86.
BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
Design based on Dry Service Condition.
Importance Factor : Normal Part code : Part 9

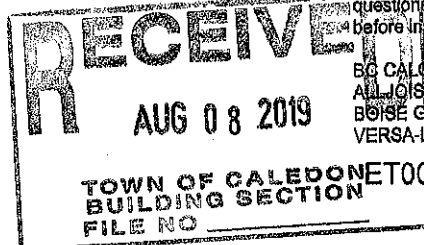


DESIGN CONFORMS TO OBC2012

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Completeness and accuracy of input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability for a particular application. The output here is based on building code-accepted design properties and analysis methods.
Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

BC CALC®, BC FRAMER®, AJS™, ALLJOIST®, BC RIM BOARD™, BCJOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®





Boise Cascade

**Single 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100-SP****2ND FLR FRAMING\Flush Beams\B7(13265)**

Dry | 1 span | No cant.

PASSED

June 26, 2019 08:07:42

BC CALC® Member Report

Build 7118

Job name:

Address:

City, Province, Postal Code: CAR...ON

Customer:

Code reports: CCMC 12472-R

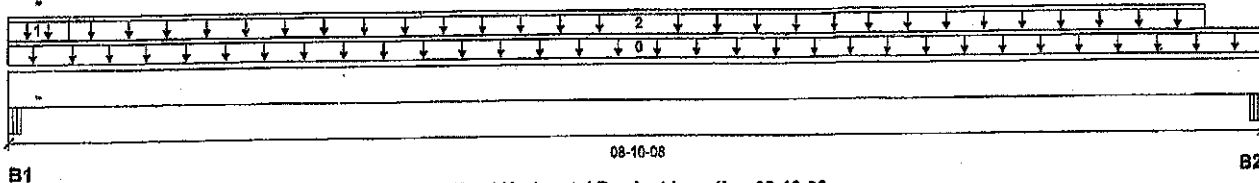
File name: BARTON 8.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B7(13265)

Specifier:

Designer: AJ

Company:

**Reaction Summary (Down / Uplift) (lbs)**

Bearing	Live	Dead	Snow	Wind
B1, 4-1/2"	53 / 0	48 / 0		
B2, 4-1/2"	49 / 0	46 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live	Dead	Snow	Wind	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	08-10-08	Top	1.00	0.65	1.00	1.15	00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	00-05-00	Top	11	5			n/a
2	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-05-00	08-05-08	Top	12	6			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	270 ft-lbs	11,810 ft-lbs	2.3%	1	04-05-04
End Shear	124 lbs	5,785 lbs	2.1%	1	01-02-00
Total Load Deflection	L/999 (0.01")	n/a	n/a	4	04-05-04
Live Load Deflection	L/999 (0.005")	n/a	n/a	5	04-05-04
Max Defl.	0.01"	n/a	n/a	4	04-05-04
Span / Depth	10.4				

Bearing Supports	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1 Beam	4-1/2" x 1-3/4"	139 lbs	3.3%	1.5%	Unspecified
B2 Beam	4-1/2" x 1-3/4"	130 lbs	3.1%	1.4%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
 Design meets Code minimum (L/360) Live load deflection criteria.
 Calculations assume member is fully braced.
 Resistance Factor phi has been applied to all presented results per CSA O86.
 BC CALC® analysis is based on Canadian Limit States Design, as per NBCC 2015 and CSA O86.
 Design based on Dry Service Condition.
 Importance Factor : Normal Part code : Part 9



DESIGN CONFORMS TO OBC2012

Disclosure

Use of the Boise Cascade Software is subject to the terms of the End User License Agreement (EULA). Completeness and accuracy of input must be reviewed and verified by a qualified engineer or other appropriate expert to assure its adequacy, prior to anyone relying on such output as evidence of suitability for a particular application. The output here is based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

BC CALC®, BC FRAMER®, AJST™, ALLJOIST®, BC RIM BOARD™, BCI®, BOISE GLULAM™, BC FloorValue®, VERSA-LAM®, VERSA-RIM PLUS®,

ET0000442



Boise Cascade



Triple 1-3/4" x 14" VERSA-LAM® 2.0 3100 SP

PASSED

2ND FLR FRAMING\Flush Beams\B5(13506)

Dry | 1 span | No cant.

June 26, 2019 08:07:42

BC CALC® Member Report

Build 7118

Job name:

Address:

City, Province, Postal Code: CAR...ON

Customer:

Code reports:

CCMC 12472-R

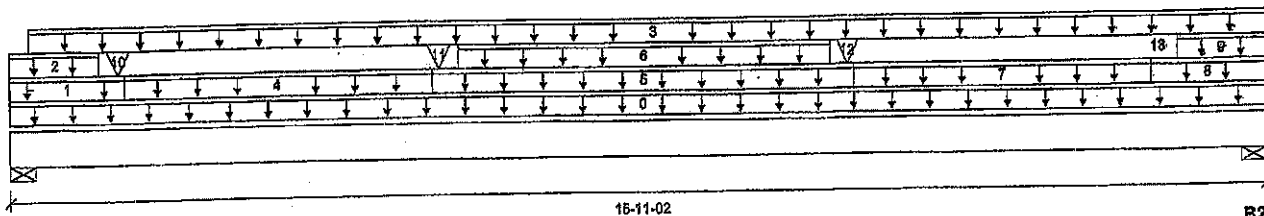
File name: BARTON 8.mmdl

Description: 2ND FLR FRAMING\Flush Beams\B5(13506)

Specifier:

Designer: AJ

Company:



B1

B2

Total Horizontal Product Length = 15-11-02

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 5-5/8"	2,046 / 0	2,540 / 0	5,857 / 0	
B2, 5-1/2"	1,831 / 0	2,340 / 0	5,103 / 0	

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	15-11-02	Top		21			00-00-00
1	E18(12058)	Unf. Lin. (lb/ft)	L	00-00-00	01-05-10	Top		81			n/a
2	E18(12058)	Unf. Lin. (lb/ft)	L	00-00-00	01-01-10	Top	209	190	703		n/a
3	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-02-14	15-11-02	Top	39	20			n/a
4	E21(12112)	Unf. Lin. (lb/ft)	L	01-05-10	05-03-10	Top		61			n/a
5	E19(12107)	Unf. Lin. (lb/ft)	L	05-03-10	10-07-10	Top		81			n/a
6	E19(12107)	Unf. Lin. (lb/ft)	L	05-07-10	10-03-10	Top	209	190	703		n/a
7	E22(12113)	Unf. Lin. (lb/ft)	L	10-07-10	14-05-10	Top		61			n/a
8	E20(12108)	Unf. Lin. (lb/ft)	L	14-05-10	15-11-02	Top		81			n/a
9	E20(12108)	Unf. Lin. (lb/ft)	L	14-09-10	15-11-02	Top			111		n/a
10	E18(12058)	Conc. Pt. (lbs)	L	01-04-10	01-04-10	Top	475	465	1,596		n/a
11	E19(12107)	Conc. Pt. (lbs)	L	05-04-10	05-04-10	Top	466	457	1,567		n/a
12	E19(12107)	Conc. Pt. (lbs)	L	10-06-10	10-06-10	Top	735	702	2,472		n/a
13	E20(12108)	Conc. Pt. (lbs)	L	14-06-10	14-06-10	Top	334	337	1,123		n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	52,476 ft-lbs	75,349 ft-lbs	69.6%	13	08-03-02
End Shear	12,385 lbs	25,578 lbs	48.4%	13	01-07-10
Total Load Deflection	L/276 (0.657")	n/a	86.9%	35	07-11-10
Live Load Deflection	L/384 (0.498")	n/a	98.8%	51	07-11-10
Max Defl.	0.657"	n/a	n/a	35	07-11-10
Span / Depth	13.0				

Bearing Supports

	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 5-5/8" x 5-1/4"	14,007 lbs	88.8%	38.9%	Unspecified
B2	Wall/Plate 5-1/2" x 5-1/4"	12,409 lbs	80.5%	35.2%	Unspecified

Nail one ply to another with
3 1/2" spiral nails @ 12"
o.c., staggered in 2 rows



DESIGN CONFORMS TO OBC2012

THIS STRUCTURE MUST BE
CONSTRUCTED TO MEET OR
EXCEED THE PROVISIONS OF
ET0000443



Boise Cascade

**Double 1-3/4" x 9-1/2" VERSA-LAM® 2.0 3100 SP****PASSED****2ND FLR FRAMING/Flush Beams/B18(14410)**

Dry | 1 span | No cant.

June 26, 2019 08:09:37

BC CALC® Member Report

Build 7118

Job name:

Address:

City, Province, Postal Code: CAR...ON

Customer:

Code reports: CCMC 12472-R

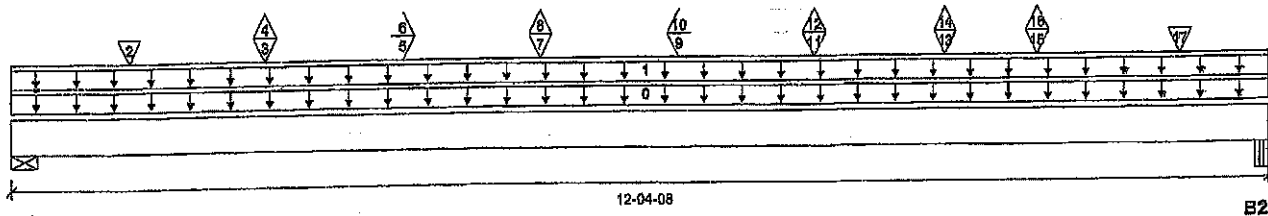
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Description: 2ND FLR FRAMING/Flush Beams/B18(14410)

Specifier:

Designer: AJ

Company:



Total Horizontal Product Length = 12-04-08

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind
B1, 4-3/8"	607 / 58	336 / 0		
B2, 2-1/4"	620 / 57	342 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Loc.	Live 1.00	Dead 0.65	Snow 1.00	Wind 1.15	Tributary
0	Self-Weight	Unf. Lin. (lb/ft)	L	00-00-00	12-04-08	Top		10			00-00-00
1	FC2 Floor Material	Unf. Lin. (lb/ft)	L	00-00-00	12-04-08	Top	26	13			n/a
2	J8(14591)	Conc. Pt. (lbs)	L	01-01-14	01-01-14	Top	90	45			n/a
3	J7(14431)	Conc. Pt. (lbs)	L	02-05-14	02-05-14	Top	106	48			n/a
4	J7(14431)	Conc. Pt. (lbs)	L	02-05-14	02-05-14	Top	-12				n/a
5	J6(14518)	Conc. Pt. (lbs)	L	03-09-14	03-09-14	Top	106	43			n/a
6	J6(14518)	Conc. Pt. (lbs)	L	03-09-14	03-09-14	Top	-19				n/a
7	J8(14638)	Conc. Pt. (lbs)	L	05-01-14	05-01-14	Top	106	43			n/a
8	J8(14638)	Conc. Pt. (lbs)	L	05-01-14	05-01-14	Top	-19				n/a
9	J6(14722)	Conc. Pt. (lbs)	L	06-05-14	06-05-14	Top	106	43			n/a
10	J6(14722)	Conc. Pt. (lbs)	L	06-05-14	06-05-14	Top	-19				n/a
11	J6(14667)	Conc. Pt. (lbs)	L	07-09-14	07-09-14	Top	106	43			n/a
12	J6(14667)	Conc. Pt. (lbs)	L	07-09-14	07-09-14	Top	-19				n/a
13	J8(14698)	Conc. Pt. (lbs)	L	09-01-14	09-01-14	Top	89	37			n/a
14	J6(14698)	Conc. Pt. (lbs)	L	09-01-14	09-01-14	Top	-16				n/a
15	J7(14476)	Conc. Pt. (lbs)	L	10-00-14	10-00-14	Top	93	44			n/a
16	J7(14476)	Conc. Pt. (lbs)	L	10-00-14	10-00-14	Top	-9				n/a
17	J8(14571)	Conc. Pt. (lbs)	L	11-06-02	11-06-02	Top	105	53			n/a

Controls Summary

	Factored Demand	Factored Resistance	Demand/Resistance	Case	Location
Pos. Moment	4,077 ft-lbs	23,220 ft-lbs	17.6%	1	06-05-14
End Shear	1,259 lbs	11,571 lbs	10.9%	1	11-04-12
Total Load Deflection	L/971 (0.148")	n/a	24.7%	6	06-03-14
Live Load Deflection	L/999 (0.096")	n/a	n/a	8	06-03-14
Max Defl.	0.148"	n/a	n/a	6	06-03-14
Span / Depth	15.1				

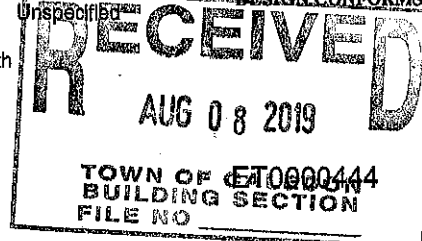
Bearing Supports

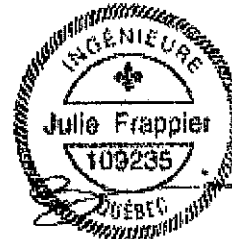
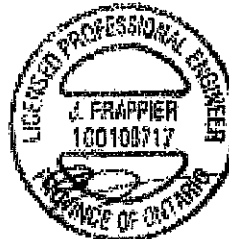
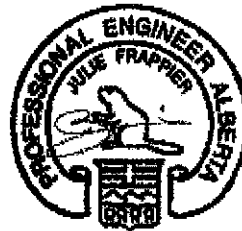
	Dim. (LxW)	Demand	Demand/Resistance Support	Demand/Resistance Member	Material
B1	Wall/Plate 4-3/8" x 3-1/2"	1,331 lbs	18.3%	7.1%	Unspecified
B2	Beam 2-1/4" x 3-1/2"	1,357 lbs	32.3%	14.1%	Unspecified

Nail one ply to another with
3 1/2" spiral nails @ 12"
o.c. staggered in 2 rows



DESIGN CONFORMS TO OBC2012





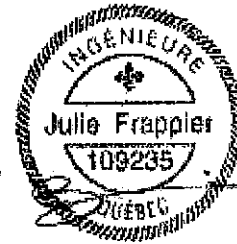
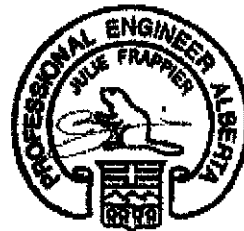
Maximum Floor Spans

Live Load = 40 psf, Dead Load = 15 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing

Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-10"	15'-0"	14'-5"	13'-5"	16'-4"	15'-5"	14'-6"	13'-5"
	NI-40x	17'-0"	16'-0"	15'-5"	14'-9"	17'-5"	16'-5"	15'-10"	15'-2"
	NI-60	17'-2"	16'-2"	15'-7"	14'-11"	17'-6"	16'-7"	15'-11"	15'-3"
	NI-70	18'-0"	16'-11"	16'-3"	15'-7"	18'-5"	17'-3"	16'-7"	15'-11"
	NI-80	18'-3"	17'-1"	16'-5"	15'-9"	18'-8"	17'-5"	16'-9"	16'-1"
11-7/8"	NI-20	17'-10"	16'-10"	16'-2"	15'-6"	18'-6"	17'-4"	16'-9"	16'-1"
	NI-40x	19'-4"	17'-11"	17'-3"	16'-6"	19'-11"	18'-6"	17'-9"	17'-0"
	NI-60	19'-7"	18'-2"	17'-5"	16'-9"	20'-2"	18'-9"	17'-11"	17'-2"
	NI-70	20'-9"	19'-2"	18'-3"	17'-5"	21'-4"	19'-9"	18'-10"	17'-10"
	NI-80	21'-1"	19'-5"	18'-6"	17'-7"	21'-7"	20'-0"	19'-0"	18'-0"
14"	NI-90x	21'-8"	20'-0"	19'-1"	18'-0"	22'-2"	20'-6"	19'-6"	18'-6"
	NI-40x	21'-5"	19'-10"	18'-11"	17'-11"	22'-1"	20'-6"	19'-7"	18'-7"
	NI-60	21'-10"	20'-2"	19'-3"	18'-2"	22'-5"	20'-10"	19'-11"	18'-10"
	NI-70	23'-0"	21'-3"	20'-3"	19'-2"	23'-8"	21'-11"	20'-10"	19'-9"
	NI-80	23'-5"	21'-7"	20'-7"	19'-5"	24'-0"	22'-3"	21'-2"	20'-0"
16"	NI-90x	24'-1"	22'-3"	21'-2"	20'-0"	24'-8"	22'-10"	21'-9"	20'-7"
	NI-60	23'-9"	22'-0"	20'-11"	19'-10"	24'-6"	22'-9"	21'-8"	20'-6"
	NI-70	25'-1"	23'-2"	22'-0"	20'-10"	25'-9"	23'-10"	22'-9"	21'-6"
	NI-80	25'-6"	23'-6"	22'-4"	21'-2"	26'-1"	24'-2"	23'-1"	21'-10"
	NI-90x	26'-4"	24'-3"	23'-1"	21'-10"	26'-11"	24'-11"	23'-8"	22'-5"

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	16'-10"	15'-5"	14'-6"	13'-5"	16'-10"	15'-5"	14'-6"	13'-5"
	NI-40x	18'-8"	17'-2"	16'-3"	15'-2"	18'-10"	17'-2"	16'-3"	15'-2"
	NI-60	18'-11"	17'-6"	16'-6"	15'-5"	19'-2"	17'-6"	16'-6"	15'-5"
	NI-70	20'-0"	18'-7"	17'-9"	16'-7"	20'-5"	18'-11"	17'-10"	16'-7"
	NI-80	20'-3"	18'-10"	17'-11"	16'-10"	20'-8"	19'-3"	18'-2"	16'-10"
11-7/8"	NI-20	20'-1"	18'-5"	17'-5"	16'-2"	20'-1"	18'-5"	17'-5"	16'-2"
	NI-40x	21'-10"	20'-4"	19'-4"	17'-8"	22'-5"	20'-6"	19'-4"	17'-8"
	NI-60	22'-1"	20'-7"	19'-7"	18'-4"	22'-8"	20'-10"	19'-8"	18'-4"
	NI-70	23'-4"	21'-8"	20'-8"	19'-7"	23'-10"	22'-3"	21'-2"	19'-9"
	NI-80	23'-7"	21'-11"	20'-11"	19'-9"	24'-1"	22'-6"	21'-5"	20'-0"
14"	NI-90x	24'-3"	22'-6"	21'-6"	20'-4"	24'-8"	23'-0"	22'-0"	20'-9"
	NI-40x	24'-5"	22'-9"	21'-8"	19'-5"	25'-1"	23'-2"	21'-9"	19'-5"
	NI-60	24'-10"	23'-1"	22'-0"	20'-10"	25'-6"	23'-8"	22'-4"	20'-10"
	NI-70	26'-1"	24'-3"	23'-2"	21'-10"	26'-8"	24'-11"	23'-9"	22'-4"
	NI-80	26'-6"	24'-7"	23'-5"	22'-2"	27'-1"	25'-3"	24'-1"	22'-9"
16"	NI-90x	27'-3"	25'-4"	24'-1"	22'-9"	27'-9"	25'-11"	24'-8"	23'-4"
	NI-60	27'-3"	25'-5"	24'-2"	22'-10"	28'-0"	26'-2"	24'-9"	23'-1"
	NI-70	28'-8"	26'-8"	25'-4"	23'-11"	29'-3"	27'-4"	26'-1"	24'-8"
	NI-80	29'-1"	27'-0"	25'-9"	24'-4"	29'-8"	27'-9"	26'-5"	25'-0"
	NI-90x	29'-11"	27'-10"	26'-6"	25'-0"	30'-6"	28'-5"	27'-2"	25'-8"

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NRC 2010, and OBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



Maximum Floor Spans

Live Load = 40 psf, Dead Load = 30 psf
 Simple Spans, L/480 Deflection Limit
 5/8" OSB G&N Sheathing

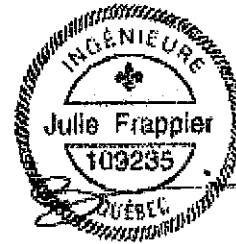
Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-1"	14'-1"	13'-3"	N/A	15'-7"	14'-1"	13'-3"	N/A
	NI-40x	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-7"	15'-1"	N/A
	NI-60	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"	N/A
	NI-70	17'-1"	16'-1"	15'-6"	N/A	17'-5"	16'-5"	15'-10"	N/A
	NI-80	17'-3"	16'-3"	15'-8"	N/A	17'-8"	16'-7"	16'-0"	N/A
11-7/8"	NI-20	16'-11"	16'-0"	15'-5"	N/A	17'-6"	16'-6"	16'-0"	N/A
	NI-40x	18'-1"	17'-0"	16'-5"	N/A	18'-9"	17'-6"	16'-11"	N/A
	NI-60	18'-4"	17'-3"	16'-7"	N/A	19'-0"	17'-8"	17'-1"	N/A
	NI-70	19'-6"	18'-0"	17'-4"	N/A	20'-1"	18'-7"	17'-9"	N/A
	NI-80	19'-9"	18'-3"	17'-6"	N/A	20'-4"	18'-10"	17'-11"	N/A
14"	NI-90x	20'-4"	18'-9"	17'-11"	N/A	20'-10"	19'-3"	18'-5"	N/A
	NI-40x	20'-1"	18'-7"	17'-10"	N/A	20'-10"	19'-4"	18'-6"	N/A
	NI-60	20'-5"	18'-11"	18'-1"	N/A	21'-2"	19'-7"	18'-9"	N/A
	NI-70	21'-7"	20'-0"	19'-1"	N/A	22'-3"	20'-7"	19'-8"	N/A
	NI-80	21'-11"	20'-3"	19'-4"	N/A	22'-7"	20'-11"	20'-0"	N/A
16"	NI-90x	22'-7"	20'-11"	19'-11"	N/A	23'-3"	21'-6"	20'-6"	N/A
	NI-60	22'-3"	20'-8"	19'-9"	N/A	23'-1"	21'-5"	20'-6"	N/A
	NI-70	23'-6"	21'-9"	20'-9"	N/A	24'-3"	22'-5"	21'-5"	N/A
	NI-80	23'-11"	22'-1"	21'-1"	N/A	24'-8"	22'-10"	21'-9"	N/A
	NI-90x	24'-8"	22'-9"	21'-9"	N/A	25'-4"	23'-5"	22'-4"	N/A

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-1"	13'-3"	N/A	15'-7"	14'-1"	13'-3"	N/A
	NI-40x	17'-9"	16'-1"	15'-1"	N/A	17'-9"	16'-1"	15'-1"	N/A
	NI-60	18'-1"	16'-4"	15'-4"	N/A	18'-1"	16'-4"	15'-4"	N/A
	NI-70	19'-2"	17'-10"	16'-9"	N/A	19'-7"	17'-10"	16'-9"	N/A
	NI-80	19'-5"	18'-0"	17'-1"	N/A	19'-10"	18'-3"	17'-1"	N/A
11-7/8"	NI-20	18'-9"	17'-0"	16'-0"	N/A	18'-9"	17'-0"	16'-0"	N/A
	NI-40x	21'-0"	19'-3"	17'-9"	N/A	21'-3"	19'-3"	17'-9"	N/A
	NI-60	21'-4"	19'-8"	18'-5"	N/A	21'-8"	19'-8"	18'-5"	N/A
	NI-70	22'-6"	20'-10"	19'-11"	N/A	23'-0"	21'-4"	20'-0"	N/A
	NI-80	22'-9"	21'-1"	20'-1"	N/A	23'-3"	21'-7"	20'-5"	N/A
14"	NI-90x	23'-4"	21'-8"	20'-8"	N/A	23'-10"	22'-2"	21'-2"	N/A
	NI-40x	23'-7"	21'-5"	19'-6"	N/A	24'-1"	21'-5"	19'-6"	N/A
	NI-60	24'-0"	22'-3"	21'-0"	N/A	24'-8"	22'-5"	21'-0"	N/A
	NI-70	25'-3"	23'-4"	22'-3"	N/A	25'-10"	24'-0"	22'-9"	N/A
	NI-80	25'-7"	23'-8"	22'-7"	N/A	26'-2"	24'-4"	23'-2"	N/A
16"	NI-90x	26'-4"	24'-4"	23'-3"	N/A	26'-10"	24'-11"	23'-9"	N/A
	NI-60	26'-5"	24'-6"	23'-4"	N/A	27'-2"	24'-10"	23'-4"	N/A
	NI-70	27'-9"	25'-8"	24'-6"	N/A	28'-5"	26'-5"	25'-2"	N/A
	NI-80	28'-2"	26'-1"	24'-10"	N/A	28'-10"	26'-9"	25'-6"	N/A
	NI-90x	29'-0"	26'-10"	25'-7"	N/A	29'-7"	27'-5"	26'-2"	N/A

- Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.
- Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.
- Minimum bearing length shall be 1-3/4 inches for the end bearings.
- Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.
- This span chart is based on uniform loads. For applications with other than uniformly distributed loads an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and CBC 2012.
- Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-1274C.

Maximum Floor Spans

Live Load = 40 psf, Dead Load = 30 psf
Simple Spans, L/480 Deflection Limit
3/4" OSB G&N Sheathing



Depth	Series	Bare				1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-0"	16'-0"	15'-1"	13'-11"	17'-5"	16'-1"	15'-1"	13'-11"
	NI-60	17'-2"	16'-2"	15'-5"	14'-3"	17'-6"	16'-5"	15'-5"	14'-3"
	NI-70	18'-0"	16'-11"	16'-3"	15'-6"	18'-5"	17'-3"	16'-7"	15'-6"
	NI-80	18'-3"	17'-1"	16'-5"	15'-9"	18'-8"	17'-5"	16'-9"	15'-10"
11-7/8"	NI-20	17'-10"	16'-10"	16'-0"	14'-10"	18'-6"	17'-1"	16'-0"	14'-10"
	NI-40x	19'-4"	17'-11"	17'-3"	15'-10"	19'-11"	18'-6"	17'-9"	15'-10"
	NI-60	19'-7"	18'-2"	17'-5"	16'-9"	20'-2"	18'-9"	17'-11"	17'-1"
	NI-70	20'-9"	19'-2"	18'-3"	17'-5"	21'-4"	19'-9"	18'-10"	17'-10"
	NI-80	21'-1"	19'-5"	18'-6"	17'-7"	21'-7"	20'-0"	19'-0"	18'-0"
	NI-90x	21'-8"	20'-0"	19'-1"	18'-0"	22'-2"	20'-6"	19'-6"	18'-6"
14"	NI-40x	21'-5"	19'-10"	18'-11"	17'-5"	22'-1"	20'-6"	19'-6"	17'-5"
	NI-60	21'-10"	20'-2"	19'-3"	18'-2"	22'-5"	20'-10"	19'-11"	18'-10"
	NI-70	23'-0"	21'-3"	20'-3"	19'-2"	23'-8"	21'-11"	20'-10"	19'-9"
	NI-80	23'-5"	21'-7"	20'-7"	19'-5"	24'-0"	22'-3"	21'-2"	20'-0"
	NI-90x	24'-1"	22'-3"	21'-2"	20'-0"	24'-8"	22'-10"	21'-9"	20'-7"
16"	NI-60	23'-9"	22'-0"	20'-11"	19'-10"	24'-6"	22'-9"	21'-8"	20'-6"
	NI-70	25'-1"	23'-2"	22'-0"	20'-10"	25'-9"	23'-10"	22'-9"	21'-6"
	NI-80	25'-6"	23'-6"	22'-4"	21'-2"	26'-1"	24'-2"	23'-1"	21'-10"
	NI-90x	26'-4"	24'-3"	23'-1"	21'-10"	26'-11"	24'-11"	23'-8"	22'-5"

Depth	Series	Mid-Span Blocking				Mid-Span Blocking and 1/2" Gypsum Ceiling			
		On Centre Spacing				On Centre Spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/2"	NI-20	15'-7"	14'-2"	13'-4"	12'-4"	15'-7"	14'-2"	13'-4"	12'-4"
	NI-40x	17'-9"	16'-1"	15'-1"	13'-11"	17'-9"	16'-1"	15'-1"	13'-11"
	NI-60	18'-1"	16'-5"	15'-5"	14'-3"	18'-1"	16'-5"	15'-5"	14'-3"
	NI-70	19'-10"	17'-11"	16'-9"	15'-6"	19'-10"	17'-11"	16'-9"	15'-6"
	NI-80	20'-2"	18'-3"	17'-1"	15'-10"	20'-2"	18'-3"	17'-1"	15'-10"
11-7/8"	NI-20	18'-10"	17'-1"	16'-0"	14'-10"	18'-10"	17'-1"	16'-0"	14'-10"
	NI-40x	21'-3"	19'-3"	17'-9"	15'-10"	21'-3"	19'-3"	17'-9"	15'-10"
	NI-60	21'-9"	19'-8"	18'-5"	17'-1"	21'-9"	19'-8"	18'-5"	17'-1"
	NI-70	23'-4"	21'-5"	20'-1"	18'-6"	23'-8"	21'-5"	20'-1"	18'-6"
	NI-80	23'-7"	21'-10"	20'-5"	18'-11"	24'-1"	21'-10"	20'-5"	18'-11"
	NI-90x	24'-3"	22'-6"	21'-3"	19'-7"	24'-8"	22'-7"	21'-3"	19'-7"
14"	NI-40x	24'-2"	21'-5"	19'-6"	17'-5"	24'-2"	21'-5"	19'-6"	17'-5"
	NI-60	24'-9"	22'-5"	21'-0"	19'-6"	24'-9"	22'-5"	21'-0"	19'-6"
	NI-70	26'-1"	24'-3"	22'-9"	21'-0"	26'-8"	24'-3"	22'-9"	21'-0"
	NI-80	26'-6"	24'-7"	23'-3"	21'-6"	27'-1"	24'-10"	23'-3"	21'-6"
	NI-90x	27'-3"	25'-4"	24'-1"	22'-4"	27'-9"	25'-10"	24'-3"	22'-4"
16"	NI-60	27'-3"	24'-11"	23'-5"	21'-7"	27'-6"	24'-11"	23'-5"	21'-7"
	NI-70	28'-8"	26'-8"	25'-3"	23'-4"	29'-3"	26'-11"	25'-3"	23'-4"
	NI-80	29'-1"	27'-0"	25'-9"	23'-10"	29'-8"	27'-6"	25'-10"	23'-10"
	NI-90x	29'-11"	27'-10"	26'-6"	24'-10"	30'-6"	28'-5"	26'-11"	24'-10"

1. Maximum clear span applicable to simple-span residential floor construction with a design live load of 40 psf and dead load of 30 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480 and a total load deflection limit of L/240.

2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 3/4 inch for a joist spacing of 24 inches or less. The composite floor may include 1/2 inch gypsum ceiling and/or one row of blocking at mid-span with strapping. Strapping shall be minimum 1x4 inch strap applied to underside of joists at blocking line or 1/2 inch gypsum ceiling attached to joists.

3. Minimum bearing length shall be 1-3/4 inches for the end bearings.

4. Bearing stiffeners are not required when I-joists are used with the spans and spacings given in this table, except as required for hangers.

5. This span chart is based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties. Tables are based on Limit States Design per CSA O86-09, NBC 2010, and CBC 2012.

6. Joists shall be laterally supported at supports and continuously along the compression edge. Refer to technical documentation for installation guidelines and construction details. Nordic I-joists are listed in CCMC evaluation report 13032-R and APA Product Report PR-L274C.



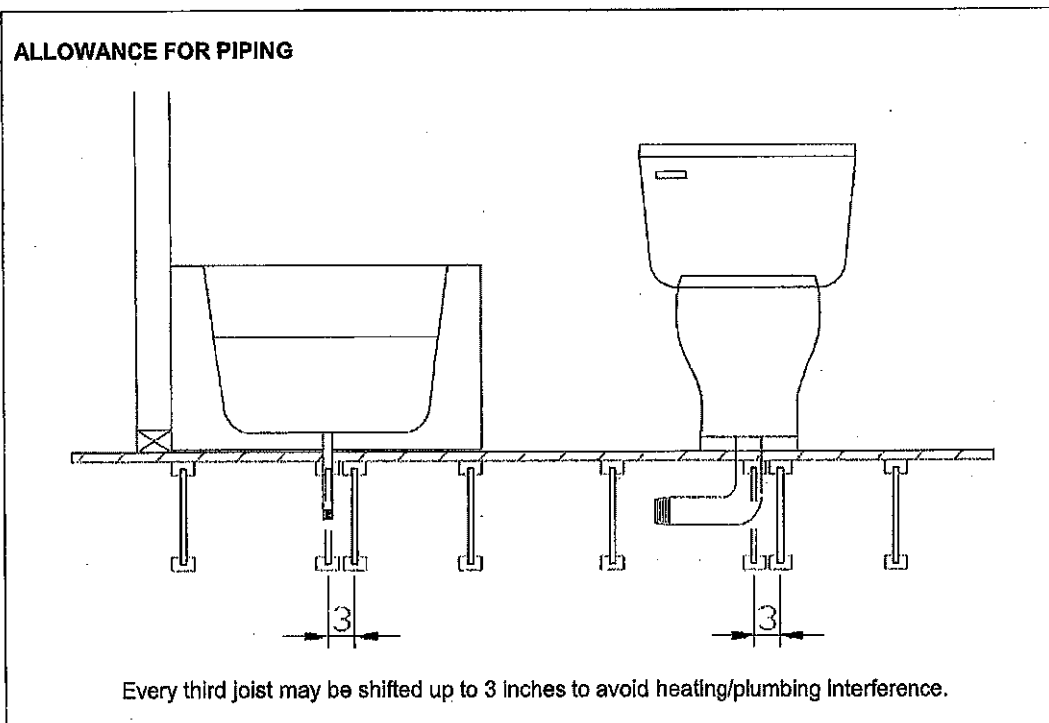
Construction Detail Limit States Design

Allowance for Piping (Installation Notes)

The floor layouts have usually not been checked for heating and/or plumbing interference. On-site adjustment of joists of up to 3 inches is permitted to avoid interferences. When moving a joist, the subfloor thickness shall be checked with code requirements when the joist spacing exceeds 19.2 inches. Except for cutting to length, I-joist flanges should never be cut, drilled, or notched.

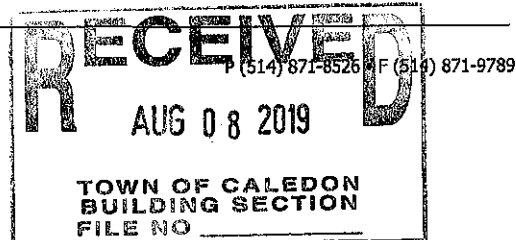
Installation of Nordic I-joists shall be as per *Nordic Joist Installation Guide for Residential Floors*. Refer to Tables 1 and 2 for maximum web hole and duct chase openings, respectively. These tables are based on the I-joists being used at their maximum spans. The minimum distance given may be reduced for shorter spans; contact your distributor for additional information.

The detail below shows the 3-inch allowance for piping. Every third joist may be shifted up to 3 inches to avoid heating/plumbing interference. For other applications, please contact your distributor.

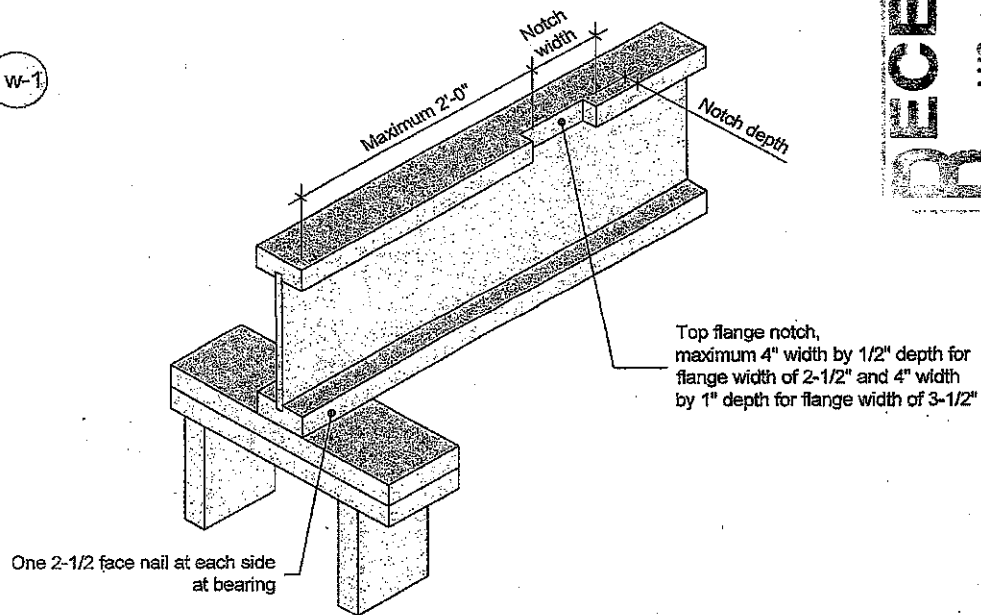


Revised April 12, 2012

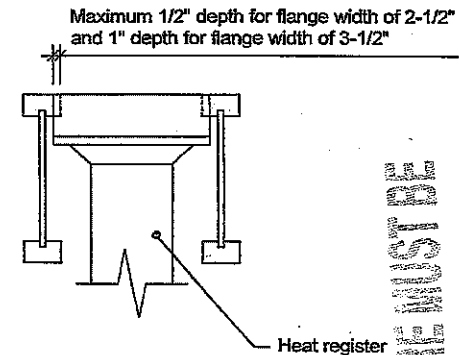
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1w-1



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THIS STRUCTURE MUST BE
CONSTRUCTED TO MEET OR
EXCEED THE PROVISIONS OF
THE CANADIAN BUILDING CODE

Notes:

1. Blocking required at bearing for lateral support, not shown for clarity.
2. The maximum dimensions for a notch on the side of the top flange are 4-inch width by 1/2-inch depth for flange width of 2-1/2 inches, and 4-inch width by 1-inch depth for flange width of 3-1/2 inches.
3. This detail applies to simple-span joists and multiple-span joists where the notch is located at the end half-span.
4. For other applications, contact Nordic Structures.

This document supersedes all previous versions. If the document has been in effect for more than one year, consult nordic.ca or contact Nordic Structures.

All nails shown in the details are assumed to be common nails unless otherwise noted. Nails shall have a diameter not less than 0.128 inch for 2-1/2-inch nails, or 0.144 inch for 3-inch nails. Individual components not shown to scale for clarity.

NORDIC
STRUCTURES

T 514-871-8526
1 866 817-3418
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TITLE

Notch in I-joist for Heat Register

CATEGORY

I-joist - Typical Floor Framing and Construction Details

DOCUMENT

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2018-04-10

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